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# AMERICAN FRUIT GROWER MAGAZINE

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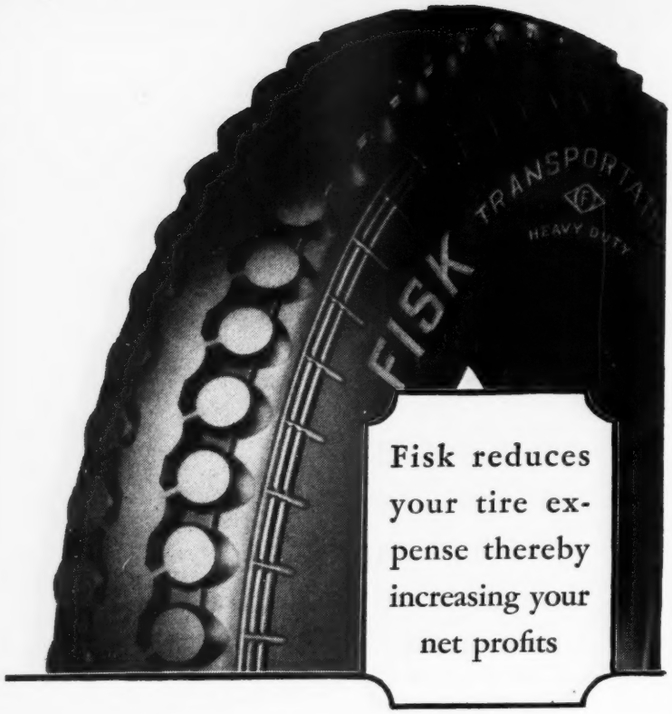


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# AMERICAN FRUIT GROWER MAGAZINE

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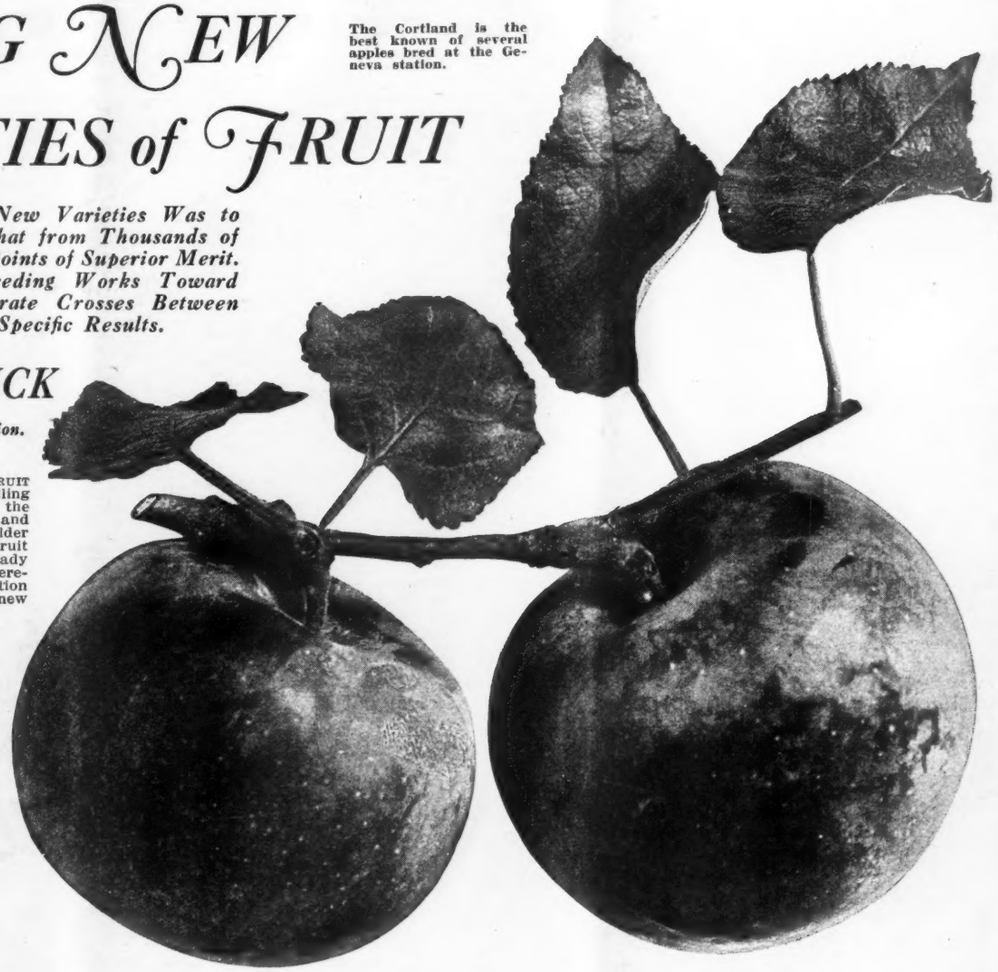
# BREEDING NEW VARIETIES of FRUIT

The Cortland is the best known of several apples bred at the Geneva station.



***The Old Method of Developing New Varieties Was to Plant Seed and Trust to Chance that from Thousands of Seedlings One or Two Might Show Points of Superior Merit. Present Day Scientific Plant Breeding Works Toward Definite Ends, by Making Deliberate Crosses Between Known Varieties to Secure Specific Results.***

## By U. P. HEDRICK

*New York Agricultural Experiment Station.*

[AUTHOR'S NOTE: The Editor of AMERICAN FRUIT GROWER MAGAZINE has asked for an article telling why new varieties of fruits are being bred at the New York Agricultural Experiment Station, and what advantages the new fruits possess over older sorts. These questions are often asked by fruit growers, many of whom think there are already too many varieties. It seems worth while, therefore, to discuss the question of why this station and other stations are attempting to breed new fruits.]

THE FRUIT GROWER'S oft-stated assertion that there are too many varieties is the subtlest of all errors—a half truth. There are too many varieties of most horticultural crops, but on the other hand, there are far too few good varieties of any horticultural crop. Every variety of fruit or horticultural crop can be characterized better by its faults than by its merits. No variety of any domesticated plant is perfect. Without new varieties horticulture in all of its fields would be at a standstill. Hence, there is now, ever has been, and ever will be a shifting of varieties in lists of horticultural crops.

Not so many years ago, to illustrate the change in varieties, Early Harvest, Red Astrachan, Twenty Ounce, and Roxbury Russet ranked ahead of Baldwin in popularity, and McIntosh and Delicious, present favorites, were not known. Bartlett was far down in the list of pears. A half century ago the Montmorency cherry was far less grown than Early Richmond, and Black Tartarian was the most popular sweet cherry. Not a peach nor a plum then popular is now planted. The Concord grape was little grown, and no variety of small fruit we now have was then known. It is because fruit lists must change as long as fruits are grown, that experiment stations and individuals are now breeding new fruits.

In the work of developing new varieties at the New York Agricultural Experiment Station, two main objects are ever in view. The chief object is that of finding out how characters of the different fruits are handed down from parent to offspring so that workers may know better how to breed new fruits. The second object is to breed new varieties of immediate value to fruit growers. The discussion of the first object leads one too far afield in science to be of great interest to those growing fruits; therefore, it seems best that this paper be devoted to a discussion of new varieties that have been bred and introduced to supplant older sorts which show weaknesses in one character or another.

### The Present Importance of Breeding

Until a few years ago nearly all varieties of fruits had come into existence through chance. Someone found a wayside seedling which showed advantageously in one character or another, named it, and introduced it. A few horticulturists in one division or another of their field, had undertaken to breed new sorts by sowing seeds of the plant they chose to work with, trusting that out of considerable numbers they might select varieties of pre-eminent value. But until about the beginning of this century there had been few well-planned endeavors to improve fruits in accordance with the laws of inheritance, because until this time few laws had been established. But toward the end of the last century, new knowledge of plant breeding gave new inspirations, new methods of work, and more precise results, so that now plant-breeding has taken its place as a scientific effort. This new knowledge has chiefly to do with hybridization, which is by far the most important tool in plant breeding.

### Hybridization

Hybridization is an extremely simple process and one that can be readily learned by any grower of plants, yet few, outside of those trained in schools and colleges, know how to hydridize, and a little on this subject may well be written in the hope that some readers may be led to take a beginner's hand in the breeding that is now going on with nearly every cultivated crop.

### Technique of Crossing

The technique of crossing, whereby hybrids are secured, varies with the type of plant, yet the same general procedure is followed in all. In crossing, the male organs, represented by the anthers, must be removed before the anthers open to shed their pollen. Figure 1 (see page 20) shows the blossom cluster of the apple in which the petals, sepals and anthers of apple buds have been removed, leaving the pistil to be cross-pollinated with pollen from another variety. The organs named can (*To Page* 20)

# IMPROVED VARIETIES of BLUEBERRIES

*Natural Pests of the Wild Blueberry, Not Easily Controlled Without Cultivation Are Steadily Curtailing Production of This Desirable Fruit. Science Has Developed Improved Varieties for High Land Planting.*

By STANLEY JOHNSTON

*South Haven, Mich., Experiment Station.*

IN ITS ORIGINAL state, the blueberry offered more possibilities for improvement than any of our other native small fruits. However, its improvement has been unusually slow, due to an abundant supply of fruit from the numerous wild bogs and fields; a lack of knowledge concerning the plant's soil requirements; and the great difficulty experienced in propagation.

Conditions have changed during the past few years to such an extent that the crop of wild blueberries is no longer sufficient to supply the demand. A few years ago the blueberry plains all over the northern part of the United States were burned over about once in three years, this burning serving as a rough-and-ready method of pruning. The competing vegetation was also kept down to such an extent that the blueberry plants, which renewed themselves rapidly from the roots, were able to produce two or three good crops. Due to the danger of forest fires, this promiscuous burning of wild areas has been stopped, and, consequently, the sweet fern, brakes, brambles, and other trees and shrubs are gradually crowding out the blueberry plants. Then in Maine, where most of our blueberries for canning are produced, the blueberry maggot has been the cause of extensive losses during recent years, and it is doubtful if this insect pest can be successfully controlled in uncultivated areas. While frost and drought are not such serious factors in the high bush blueberry plantation, they often completely destroy the crop in the low bush areas, such as are found in Maine and the northern portions of Michigan, Wisconsin, Minnesota, and New York. All of these adverse factors have done much to brand the blueberry crop from the wild lands as unreliable and to emphasize the necessity of bringing this highly desirable fruit under cultivation.

The Katherine (left) and the Cabot (right), are two of the most productive varieties developed at the South Haven station. Both are two years old and give every promise of high production and profit.

For nearly 70 years various horticultural investigators have attempted to improve the wild blueberry. It has already been mentioned that progress for many years was very slow. The plants did not transplant readily and they were remarkably difficult to propagate. It remained for Dr. F. V. Coville of the United States Department of Agriculture to solve the problem. He began his investigations in 1908 and in a few years showed conclusively that the blueberry plant requires an acid soil and that it will not thrive on a soil that is alkaline. He also contributed considerable information with regard to methods of propagation, although the rooting of blueberry cuttings is still a difficult and uncertain process.

In much of this fine work Dr. Coville was aided by the co-operation of Joseph White and Company of Whitesbog, N. J. Particular credit is due Miss Elizabeth White for her work in bringing together a collection of the most desirable wild selections and in establishing a nursery business for the purpose of offering plants of these superior varieties to the public. The combined efforts of these two investigators have resulted in the development of several varieties of the blueberry which produce berries averaging one-half to five-eighths of an inch in diameter. The fruit from a 50-acre plantation that has been established at Whitesbog is being sold in New York at very satisfactory prices. Experiment stations and private individuals in various parts of the country have obtained plants of these selected varieties and are gradually making ready to place the cultivated blueberry industry on a firm foundation.

The blueberry has many qualifications which make it popular. The fresh fruit is almost universally liked, while canned it is (*To Page* 19)

# Is YOUR NAME on the PACKAGE?

*Why Does the Intending Purchaser—of Shoes, or Clothes, or Fruit—Prefer the Article That Bears the Producer's Name and Brand? Confidence in the Quality of Product is Stimulated by Signature of the Producer.*

By G. E. PRATER

*Manager Wolverine Fruit & Produce Exchange.*

IN THE earlier days of fruit and vegetable growing, most of the marketing was done in nearby towns, or by local shipment to reasonably nearby cities, each grower packing his own produce in his individual manner and thereby letting it be sold on its merits.

Production in those days was sufficiently light to cause consumers the necessity of more or less personal shopping and personal selection of their requirements, each sale being made on the basis of whatever price agreement could be reached between the prospective customer and the vendor.

Production of fruits and vegetables as a whole has more than trebled per capita in the past 20 years, and it takes real merchandising methods to get a profit for the grower in the present day.

We, as growers, should study the merchandising methods of other lines of business, in which we are the consumer, thereby getting the consumers' reaction in making their purchases at retail. We may feel that we do not have the retailing of our fruits to actually transact, and are interested only in the wholesaling of the product. However, we must remember that every line of production that is making any money today has made a close study of the consumer's requirements, fitting their offerings to his whims and fancies to the last degree.

While we are studying the consumer's attitude, we must also take into consideration the retailer's attitude and the fact that he is inclined to stock his shelves with the goods that move most readily and with the least selling talk or effort. That is why he prefers nationally advertised brands. The story of their good qualities has already been told to his customers. All he has to do is wrap up the goods and take in the money. Why should he spend valuable time telling his customers that some unbranded or unknown article is just as good or better, unless he is realizing a wider profit at the expense of the producer?

To get at the consumer's angle, let us go out on a little shopping tour. I will buy the cigars. What will you have? Here are some very fine home-made ones in bulk, not very well made or attractive, but real good tobacco and only a nickle. Others in neatly labeled boxes of 50 each, nice tinfoil wraps on each cigar with a band announcing the maker's name, and selling at two for 15 cents. Alongside is a box of two for a quarter: plain cigars in a neat box bearing the name or trade-mark of a well known maker. Which will you select?

I pay the quarter and we go to a very reliable shoe store, as it is raining and you need a pair of rubbers. The merchant says that he is having a special on a line made by a well known factory, but who, by reason of the very low price, are not permitting their name as makers to be known. He will fit you out at 75 cents. Or he has another line, in standard stock, made by a factory of national reputation and displayed in cartons bearing their name as well as having the name moulded into the instep of each rubber for identification. The price of these is a dollar and a quarter. Which will you have?

After you have paid the dollar and twenty-five cents, you suggest that you would like to go to a good clothier for a business suit that will hold its shape and look well for some time. The merchant puts a suit on you, notes its elegant fit, calls your attention to the firm weave, excellent cloth and

beautiful lining and the fact that it is selling for only $23.50. This looks like a good buy and you are interested. You look in the glass and are about sold. You take off the coat and at once look for the label. "Who makes this suit?" you ask. A well known factory is named. "Why don't they put their name in it?" is your question, and your interest in that garment is gone. You may be induced to look at other suits in that store, but your opinion of that particular merchant is that he needs watching. He may be handling goods of doubtful reputation. Before buying, you will look elsewhere.

### Consumers Want Trade-Marked Articles

"By the way," you say, "I intended getting a new piece of spray hose while in town. Is there a good hardware store close by?" There is. We walk in, you look at an apparently good hose. The price is 20 cents per foot. You ask the maker's name. "Don't know," says the merchant, "but we get that from a reliable jobbing house and sell lots of it; it is so much cheaper than our best trade-marked hose, which costs twice as much, and I don't believe it is any better." If you buy at all, you will not chance the unknown article.

The consumer's position is merely this: If the article has merit, the producer will be sufficiently proud of it to put his name on it. It is the cheapest and most effective advertising the honest producer can have, and the lack of identity on any kind of merchandise will at once cause suspicion on the part of the consumer.

There are hundreds of brands of oranges, grapefruit, apples, peaches, cherries, grapes. In fact, all fruits. I question whether there is a wholesaler in the United States who knows half of them; consumers less than half of one per cent. Yet watch the consumers in any grocery or fruit store as they make their purchases. They always look to see who packed the product they are buying. Not one in 10 could tell you the name of the packer after they leave the store, but they have the satisfaction of knowing they have purchased something the producer was sufficiently proud of to let people know he packed it.

Distribution methods are changing. The most noted changes have taken place in the past five years. Fully 50 per cent of the retail groceries today are a part of some of the larger chain systems. In many centers, the independent grocers have organized to buy collectively, in order to compete with their chain store competitors in original costs. Two years hence will see better than 75 per cent of our retail merchants either in the larger chain organizations or members of retail associations making their purchases in carlots.

### Standardization Pays

What does this mean? Merely that the shipper who has not prepared to standardize; that the locality which chooses to go it alone as individuals and not assemble their products in uniformly packed carlots, is out of luck. The only trade that will be left for them is the peddler.

"Oh, yes!" you say, "chain stores are looking for a low priced article and are not as particular about quality as the independent grocer, so long as they can undersell." This is true (*To Page* 18)

# SUCCESSFUL CO-OPERATON in GROWING and MARKETING

***This Georgia Company of Apple Growers is Unique Among Co-operatives in that the Company Supervises All the Work of Growing the Fruit and the Orchard Management Besides Successfully Marketing the Crop.***

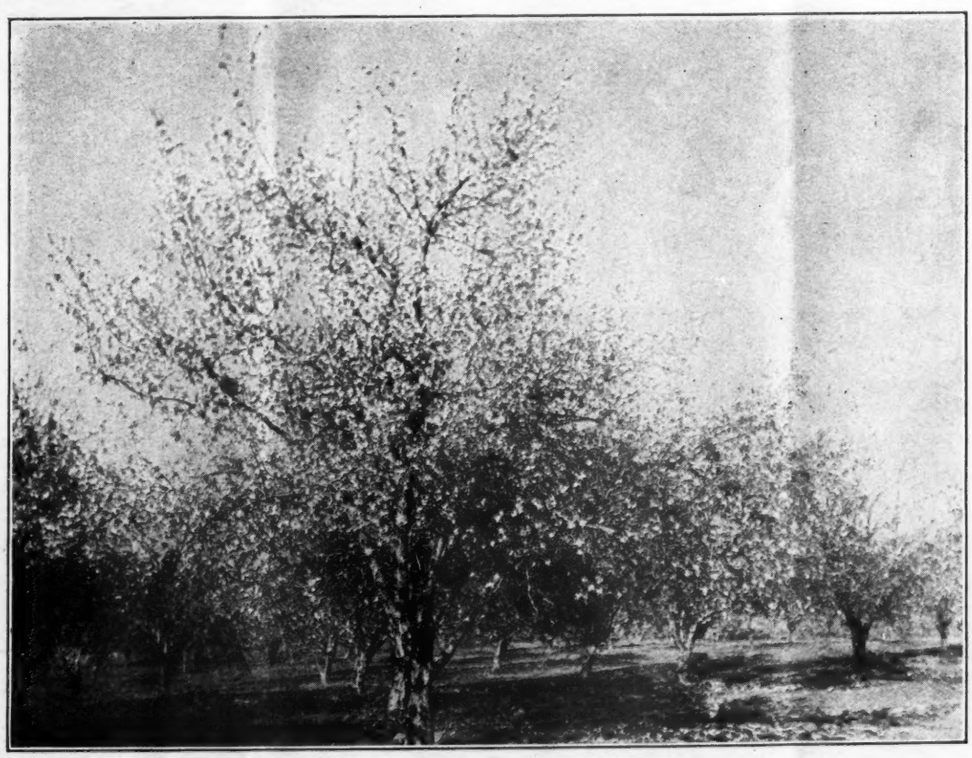
## By J. H. REED

THAT APPLES can be grown co-operatively at a profit has been demonstrated by the Tallulah Apple Growers' Company, of Cornelia, Ga. This company marketed its 1927 crop of approximately 18,000 bushels of apples for over $40,000, realizing for the different growers as high as 50 per cent on the original investment.

Twenty-five members are in the organization, which was incorporated under the laws of the state of Georgia in 1927. These members own approximately 425 acres of orchards, and the trees range in age from seven to 12 years.

A significant thing about the results obtained by the company is the fact that its apples brought more per bushel than those marketed by independent growers in the same section. And this in addition to the fact that all the orchards are under one management, which reduces overhead, operating expenses and the like. All of the growers did not net the same profit from their orchards, of course, because of differences in location, age of the trees and other factors, but all of them showed a good profit on the amount invested.

Some of the features of the contracts which members have with the Tallulah Apple Growers' Company are interesting and may explain why the organization has been so successful in its first year of operation. One of these features is a clause stating that the expense per acre incurred by the management may not exceed $75 per year per acre without special and written consent of the owner of the acreage. Quite a number of owners have consented and have installed underground spray systems at considerable expense. But this clause not only puts a check on any extravagance on the part of the manager of the company, but also on ill-advised expenditures on the part of the orchard owners themselves. The company realizes that only owners who are deriving a profit from their orchards will remain satisfied owners, and it is doing everything possible to check needless expenditures.



One of the groves of the Tallulah Apple Growers' Company, near Cornelia, Ga.

Another clause forbids the ownership of more than 10 per cent of the common stock of the company by any one person, thereby preventing any one man or group of men from gaining control.

A third provision places a fine of 25 cents a bushel on all apples marketed outside of the association warehouse. Growers are not forbidden to market the fruit themselves, but if they do so, they agree to pay to the organization 25 cents for each bushel marketed independently. The result is that the members send practically all of their apples to the packing house maintained by the association, where the fruit is pooled and sold by grade on the markets of the country. This uniform grading and centralized marketing has had the effect of placing the fruit on the best markets consistently and bringing in the top prices for producers — something no one independent grower could accomplish.

Indeed, the company maintains not only a management office to care for the orchards, but a sales office to care for the sale of the fruit.

The manager handles all of the orchards just as though they were one large orchard of 500 acres. He employs all of the help required and uses it impartially for the benefit of all the members. This arrangement enables him to buy materials in quantity at a saving and at the same time to run the individual orchards with a minimum of men and a maximum of efficiency.

He handles everything, from the time a tree is set until its fruit is ready for the market. Then the sales manager takes over the work of handling the crop.

The sales manager directs the sale of the different grades, sending them to the markets that are bringing the best prices and shifting the consignments so as to prevent "gluts" on the market and to take advantage of the best (*To Page* 18)

# INSULATING the FRUIT CELLAR

*The Successful Functioning of a Fruit Storage Warehouse or Cellar Depends Almost Entirely Upon the Effectiveness of the Insulating Material Used. A Constant Uniform Low Temperature Is Essential to Carry Fruits in Storage Over Any Appreciable Period of Time.*

By L. M. FRANCISCO

STORING FRUIT in underground cellars is as old a practice as fruit growing itself. But fruit cellars with cool air that is constantly in circulation is a new development among orchardists. It is one of considerable importance, too, in these days when farmers of all kinds are learning that the best time to sell their crops is when prices are the highest. Farmers who have the facilities for storing their crops until then are the ones who have the most to account for on their income tax returns to Uncle Sam.

But how to keep the fruit cellar cool in warm weather, as well as providing it with sufficient ventilation, has always been a problem that has baffled even the most resourceful orchardists. The lavishing of money on building heavy, thick walls has not solved it, for masonry walls of all kinds cause condensation of moisture, and wooden walls and ceilings, when below or near the ground, are subject to decay.

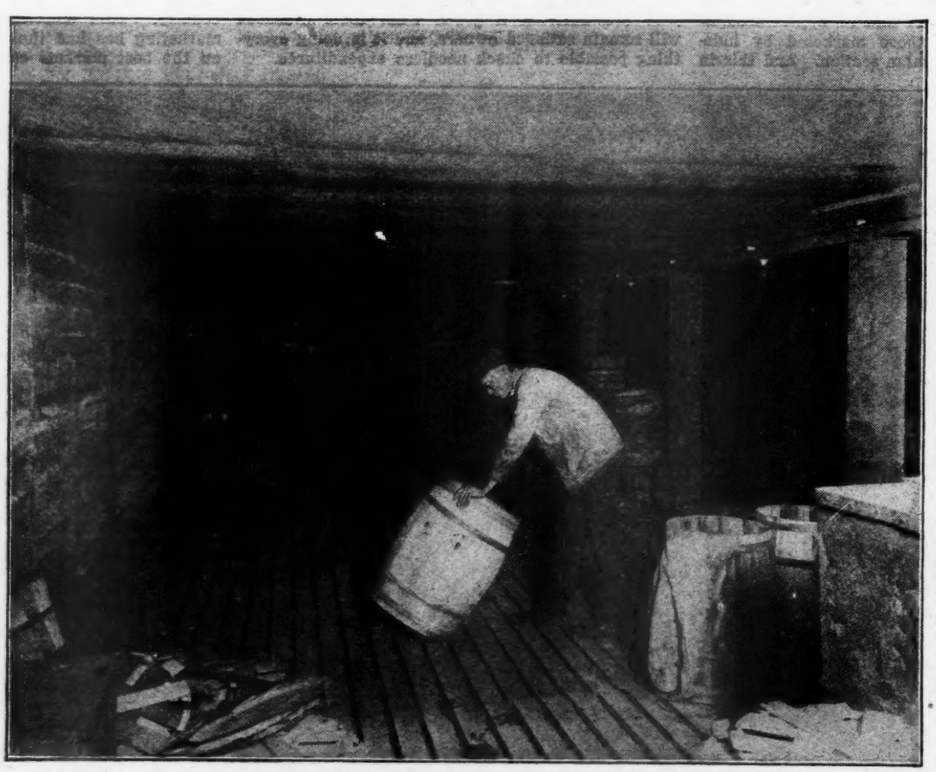
### Kentucky Takes the Lead

Now, however, comes from Kentucky news of a new type of fruit cellar that progressive orchardists are building there, in which cool, moving fresh air is assured throughout the storage space the year round.

The source from which this news comes may at first surprise many fruit growers in other sections of the country, for Kentucky is not as yet generally thought of as an orchard country. As a matter of fact, its future is largely before it, for there are few orchards on a commercial basis where trees are more than 10 years old. But Kentucky fruit comes on the market just after the Georgia fruit crop has been disposed of and before the output of the Michigan and other northern orchards is ripe. Thus, being comparatively new to the fruit growing business, Kentucky farmers have not had a chance to get into the ruts that so often encase farmers whose activities merely repeat those of their forebears. The Kentucky orchardist has had a weather eye open for the proper way to store his fruits, regardless of traditions. Furthermore, his necessity has been a little more urgent, for, unlike his Georgia colleague, the market is not always hungry for his products, since he is not the first to supply it. Nor can he trust to the weather to turn cold and keep his harvested crops for him, as his fellow orchardist in Michigan and points North can, where the preservative cold of the winter months stretches immediately ahead of harvest. If an exceptionally large supply of southern fruit gluts the market while the Kentucky harvest is under way, the Kentucky orchardist can many times profit by having a means of storage for a short period. If general market conditions dictate storing the crop of winter apples until spring, his cellar must needs be nearly weather proof, and weather-proofing, in turn, resolves itself into an insulation problem.

**Above—The crop from large commercial orchards such as this is often more profitably marketed via the Storage Cellar.**

**Below—The insulated, automatically ventilated and electrically lighted storage cellar on Exall's Orchard has 32 by 64 feet of floor space, with nine feet clearance between the wood slat floor and the ceiling, which is formed by a lumber made from cane fibres that possesses extraordinary insulating qualities, as described in the article. With this ceiling and with the concrete walls underground, it has been possible to keep fruit in this cellar clear through the month of March, which is the equivalent of June or July in northern latitudes.**



### Fruit Cellar on the Exall Orchard

The fruit cellar illustrated and described on this page is on Exall's Orchard just out of the city of Paducah, Ky. Half of this 100-acre farm is devoted to the raising of Winesap and Black Ben apples, while there are 15 acres in Elberta peaches and one-half acre in strawberries. The remainder of the farm is devoted to the standard crops of the region, and there is some virgin land used for pasturage. The owner of the farm is well known throughout the country as a successful commission merchant, for he handles the output of many of his neighbors' farms, while his own trees furnish him with a good share of his produce.

For handling the apples and peaches from Exall's Orchard, a fruit storage warehouse has been designed that combines several interesting features in addition to its efficient storage cellar. The first floor has a large loading platform of the same height as the trucks and wagons that bring in the fruits from the orchard and that take them away to town. On the first floor are crating and sorting machines that assist greatly in maintaining uniform quality in the packing of the fruit. This floor is connected with the storage cellar by both a stairway and an elevator. The latter relieves the workmen of the laborious task of carrying baskets, barrels and sacks up and down endless steps, and speeds the work.

### Construction of Cellar and Why It Is Successful

The basement is electrically lighted, so that there is no working in the dark. It is as dry as any main floor room, far cooler, and there is a complete change of air, automatically made every 40 minutes when the intakes are open. This thorough ventilation is made possible not only by the air intakes and flues, but also by the sensible construction of the floor. There are really two floors. The first is the dirt floor. Eighteen inches above it is laid a wooden slat floor that allows the air to get in under the stored fruit and at the same time keeps down the moisture. The walls of the cellar are of poured concrete and are almost entirely underground. They surround a floor space 32 by 64 feet and there is a nine-foot clearance between the slat wood floor and the ceiling.

The secret of the success of this cellar is in the nature of this ceiling. It is of a new type of material that insulates against heat and cold alike and at the same time prevents the condensation of moisture. This material, which is a by-product of southern plantations, being made from sugar cane fibres, is commercially marketed in seven-sixteenths inch thick boards four feet wide by eight to 12 feet long, and it weighs only 60 pounds to the hundred square feet. In such form, it has several times the strength, it is claimed, of common wooden boards when nailed perpendicularly to the joists. Hence the structure of the building itself is strengthened by this ceiling. This man-made lumber is vermin-proof and waterproof, so that it cannot decay or become waterlogged.

According to engineering tests, about two-thirds of the heat leakage out of a house—and the same thing applies for the leakage of heat into the house—is through the roof. So in this basement, with concrete walls below ground and an insulated ceiling, the escape of cold air out of the cellar and the transmission of warm air from the outside into it is reduced to an absolute minimum. It is stated that according to tests made by the American Society of Refrigerating Engineers, this commercial insulating material is the equivalent, in insulating value, of three thicknesses

of wood, 12 thicknesses of brick and 25 thicknesses of concrete. In other words, the ceiling of the Exall storage cellar with only a seven-sixteenth-inch thickness of insulating "lumber" is as effective in stopping the intrusion of heat as it would be were the ceiling composed of one and one-fourth-inch thick planks, five inches of solid brick or 11 inches of solid concrete! And in addition to its heat-stopping quality, the ceiling is waterproof. Water can not condense on its under surface; there is no "sweating" that so often renders the air of storage cellars far too damp for properly keeping the fruit.

**Provides Longer Storage Period**

Since the insulating two years ago of this ceiling in the Exall cellar, it has been possible to keep fruit through the month of March, according to Ted Cooper, manager of the orchard. Southern planters and orchardists will readily appreciate what an achievement this is, for south of the Ohio River March is a warm month, and the winter is not much more severe than a mild northern spring. When the photographs were taken, it was March and the temperature outside was around 80 degrees, while within the basement it was less than half that. Mr. Cooper proffered the writer a drink of pure cider from the cellar, and a pocketful of Winesaps. Both cider and apples were much too cold for comfort for the teeth. When it is borne in mind that there is capacity in the cellar for more than 4000 bushels of apples and peaches, one can readily understand how the owner is thus enabled to take advantage of favorable market prices whenever they are offered for his stored fruits. And all this economic advantage has been assured at a cost not much over $100 in materials of permanent use, for the insulating material costs no more than the same amount of good wood lumber.

## Synthetic Nitrogen Production Gaining

PROGRESS in the nitrogen fixation industry has resulted in the production of a sufficient quantity of synthetic nitrogen at such prices as to overcome the Chilean control of world nitrogen prices, according to a statement made by the chief of the fertilizer and fixed nitrogen work of the United States Department of Agriculture. The speaker traced the development of synthetic nitrogen production from the arc process introduced in Norway about 1905, and continuing with the cyanamid process and the later direct synthetic method of ammonia production. Among important synthetic nitrogen producers in the United States are plants at Muscle Shoals, Syracuse, N. Y., Charleston, W. Va., and a plant under construction at Hopewell, Va.

According to the speaker the nitrogen problem has come to revolve about fuel in general, and coal in particular. The industry from its scope and relative absence of limitations on its raw materials—air, water, and coal—seems due for expansion. He stated that Chilean production will not likely cease to be of significant proportions, but that it will have to adjust itself to the world price level established by attainable costs in synthetic production.

**The Voice on the Farm**

A farmer's daughter started to practice singing. One day her father came in unexpectedly.

"What's that extraordinary noise?" he inquired.

"That dear," replied his wife, proudly, "is Jane cultivating her voice."

"Cultivating! Hah! That ain't cultivating—that's harrowing!"


CHRYSLER

Plymouth

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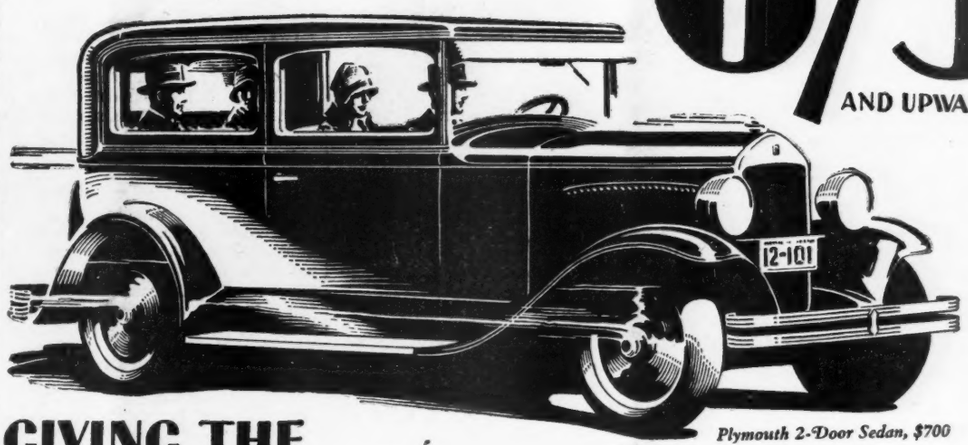


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For no other than the Chrysler-Plymouth gives for style the new chromium-plated slender-profile radiator, the new type fenders, the pleasing new arched window silhouette. No other gives for comfort and elegance, such full-sized, roomy, luxuriously upholstered and finely fitted bodies.

No other gives for performance true high compression through the "Silver-Dome" high-compression engine using any fuel; and for safety, the surety and ease of light-action, internal expanding hydraulic four-wheel brakes with squeakless moulded brake linings.

And these are only a few of the features unique to Plymouth which are convincing thousands upon thousands that the Plymouth is the standard whereby to judge values in the lowest-priced fields—that anything less than the Plymouth gives is less than your dollar's worth.

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HOW easily does your tractor start?—or your truck, or stationary engine? Does it go off with a bang at the first turn? If not, take this tip—Eveready Columbia Dry Batteries provide fat, hot, sure-fire sparks at all speeds. No matter how slowly you crank, you get the same intense spark. No need to spin the engine. Eveready Columbias are great also for long, never-miss running. Indoors, or in protected battery boxes, use Eveready Columbia Ignitors. For outdoor and general use, most farmers prefer the Eveready Columbia Hot Shot, for its water-proof steel case defies all weather, stands hard knocks, and cannot be short circuited. Comes in three types, 6, 7½ and 9 volts, to meet every ignition need.

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# The Market Review

By PAUL FROEHLICH

United States Bureau of Agricultural Economics

RECENT shipments of all leading fruits, except oranges, plums and prunes, have been much heavier than those of a year ago. Carlot forwardings of early apples, grapes and cherries have been nearly double the volume shipped by the close of August, 1927, while movement of peaches, pears, plums and prunes shows a 50 per cent increase over last season's corresponding record. Highest peak of forwardings of peaches and pears probably is past. Northwestern prunes are now very active. Grape shipments are likely to be heaviest during late September, and apple movement at its height in October.

Prices of most 1928 fruits have shown a much lower level than resulted from the relatively light crops of 1927. Peach prices were discouragingly low at the time of peak movement from southeastern states. August crop estimates for apples and peaches were increased slightly over the July forecast, but small decreases were registered for pears and grapes. Prospects are for heavy production of citrus fruits.

### Grape Season Active

California grapes have been moving in heavy volume and are increasing each week. The Ozark crop is also under way, and Michigan will soon start. Efforts to form a pool for California raisin grapes failed this year but may be effective next season. The production of raisin varieties is especially large, and it was hoped that growers would agree to leave half the crop unpicked. During mid-August, lug boxes of Thompson Seedless table grapes were bringing about 50 cents in the Fresno district, while Malagas ranged around 70 cents at shipping points. Values were very moderate, compared with a year ago.

A record crop of 2,538,400 tons of all classes of grapes is now indicated for California, and other states together expect 307,000 tons, or fully 50 per cent more than last season's light production. Prospects improved during July in New York, Pennsylvania and Ohio, so that those states now have expectations of 86,500 tons, 21,500 and 28,700 tons respectively. The Michigan crop likely will exceed 80,000 tons, compared with 52,000 in 1927. Arkansas may have four times last year's light crop, while Missouri looks for twice as many grapes as in 1927. Special efforts will be made this season to stimulate consumption of grapes, by advertising and probably by the observance of "grape week."

### Peaches Selling Higher

Considerable improvement occurred in prices of peaches, once the heavy Georgia crop was out of the way. F.o.b. quotations on Elbertas had been as low as 75 cents per crate or bushel basket, but the market was advancing during August, as supplies were reduced. Best North Carolina Elbertas reached $1.25 at shipping points, and were expected to go higher. Jobbing sales in city markets ruled mostly $1-$2 the middle of the month, but were still only one-third to one-half those of a year ago. Worm injury and rain damage caused a slight reduction of crop figures for the Southeast, but the supply nevertheless was abundant. By the tenth of the month, Georgia had shipped nearly 16,000 cars, compared with 11,725 all of last season.

Tennessee expected 3000 carloads this year, as against shipments of 500 cars in 1927. Eastern Tennessee peach growers formed an exchange and were endeavoring to market a greater portion of the crop than usual within the state. Movement by truck has been very active. Illinois shippers were counting on 2300 carloads by rail and truck from points in their state. Last season Illinois shipped 1600 cars by rail and in 1926 about 3000 cars. Spring freezing injury reduced crop prospects in New Jersey; that state and Delaware expect fewer peaches than last year. Western peaches were doing well. Utah growers thinned their fruit more carefully this season, and the crop was developing nicely.

Total peach production estimates were increased by August to about 67,500,000 bushels, or only 2,400,000 less than the big crop of 1926 and fully 22,000,000 bushels more than last year. California now expects a huge total of 25,682,000 bushels. The forecast of 2,564,000 bushels in Arkansas was being supported by carlot movement. In fact, the production estimate for Arkansas is only about 50 per cent greater than the 1927 figure, but shipments by August 5 were double those of last season and had already filled 3600 cars.

### Apple Prices Moderate

Early apples from eastern producing sections have been bringing only 50 cents to $1.75 per bushel basket in large consuming centers. Differences of price are regulated largely by variety, quality and condition. Midwestern fruit was selling higher than that from Atlantic Coast states. Total movement from eastern and central producing sections to date is running only slightly above that of last summer, but western apple shipments are three times greater than to the same time in 1927 because of the heavy output in northern California. The central district of California was becoming active during August. The market for northwestern apples was opening slowly and with prices at a rather low level. A few sales were reported of five-tier stock for export at $1.80-$1.90 per box, f.o.b. New York, which would net around 75c-85c at shipping points. These apples were Extra Fancy grade Jonathans and Winesaps.

Considerable damage to Washington and Oregon apples occurred from the excessively high temperatures of late July. The Idaho crop, however, did not suffer much, and prospects were favorable in that state. Twig blight in Utah was expected to reduce the volume of Jonathans. In spite of these adverse conditions in certain localities, the August estimate of the commercial apple crop in four northwestern states was increased slightly to 12,802,000 barrels, or 38,406,000 boxes, compared with 30,822,000 boxes last season. Idaho shows a sharp decrease from the big crop of 1927, but other northwestern states will have large increases, provided weather conditions continue favorable. West Virginia does not expect so many apples of market quality as in 1927, but Virginia's commercial crop may be two-thirds greater than that of last year. In spite of a reduction of half a million barrels during July, New York is

still likely to have a 50 per cent increase over its last season's total, and Illinois and Michigan show great gains. The commercial apple crop of the United States is now estimated at 33,277,000 barrels, or 7,300,000 more than in 1927. The bumper crop of 1926 totaled 39,000,000 barrels.

### Foreign Market Prospects

Recent reports concerning apples and pears on the Continent of Europe seemed to indicate that American apples should find a rather favorable market in European consuming centers the coming season. Crop conditions vary to a great extent, but, generally speaking, northern and western Europe have only a small to medium crop of apples and a medium to slightly better crop of pears. The southern European districts have an apple crop ranging between fair and good, but a light pear crop. In England and Wales, the fruit crops are patchy. Abnormal dropping is reported and most varieties promise only fair crops, compared with the rather heavy production last year. Early varieties of apples give better promise than the fall and winter kinds. Conditions in Canada indicated good crops of apples and pears in British Columbia and slightly below average yields in the eastern provinces.

Markets for American apples and other fruit probably will be especially good this season in Germany and Holland. In British markets, American shippers need not be concerned over the competition of Australian and New Zealand apples so much as the possible size of the Continental fruit crops and the production in home orchards. Pears also compete actively with apples during the early part of the season in Great Britain.

Exporters of apples to the United Kingdom this season are interested in the official ruling under the British Merchandise Marks Act that all imported packages of apples will be required to be marked as to the country of origin in letters not less than one-half inch in height.

Growers and shippers of apples and pears in western United States are giving more and more attention to the washing of their fruit, especially for export trade, so as to reduce the spray residue to the minimum and to bring all shipments within requirements of the regulations. It has been ascertained that, if the fruit is properly washed, its keeping quality is not injured. Many additional washing machines are being installed this year.

### The Citrus Outlook

The United States Department of Agriculture has not yet made an official estimate of the citrus crops, but conditions were generally improved during July and the August 1 figure for Florida grapefruit was raised to 79 per cent of normal, as against 60 a year ago. Florida oranges showed a condition of 84 per cent, or 19 points higher than in 1927. Tangerines were given a condition figure of 82 per cent, whereas last year the corresponding report showed 58 per cent. Oranges in California showed a condition of 93 per cent, compared with 67 per cent on August 1 last season.

These condition reports would seem to substantiate fairly well the commercial estimates, which have been made by individuals or local organizations. A widely-published unofficial forecast for Florida indicates possibly 11,000,000 boxes of oranges and 9,000,000 boxes of grapefruit. In case such production is realized, the Florida orange crop may be as heavy as that in 1924, and the grapefruit crop would be one of the largest on record. The hurricane in early August doubtless did some damage to citrus fruit in Florida and may reduce these estimates. California is estimated unofficially to have a total of 28,000,000 boxes of oranges, lemons and grapefruit combined, or practically as many as last season.

The Florida Citrus Growers' Clearing House Association was successful in signing up at least 85 per cent of the prospective crop for this season, and soon will be in active operation, according to trade reports. It is felt that long strides have been taken toward the solution of the marketing problems for this important part of Florida's production. With the most important factors in the citrus industry in that state now co-operating, instead of competing, the orderly and profitable marketing of citrus fruits should be nearer realization than ever before. Florida citrus, gathered and packed for shipment by rail and water in the 1927-28 season, is estimated locally to have been valued at $51,352,930. The commercial report from which the figure is taken continues as follows: "This amount does not include a large quantity of grapefruit canned in the state and citrus fruit moved by truck and sold locally. The volume of fruit canned is considerable, although it is not nearly what it will be when the public becomes aware of the fact that grapefruit can be put up in tins without losing its flavor and in a way that will keep indefinitely. The estimate of the State Commissioner of Marketing indicated rail and water-borne shipments of oranges during the season as 17,968 cars or 6,466,080 boxes; tangerines as 1116 cars or 401,760 boxes, and grapefruit as 17,555 cars or 6,319,860 boxes. Express shipments, made up principally of oranges and grapefruit, were estimated at 1199 cars. The total of 37,833 cars was equivalent to 18,619,880 boxes for the season. At an average value of $4.16

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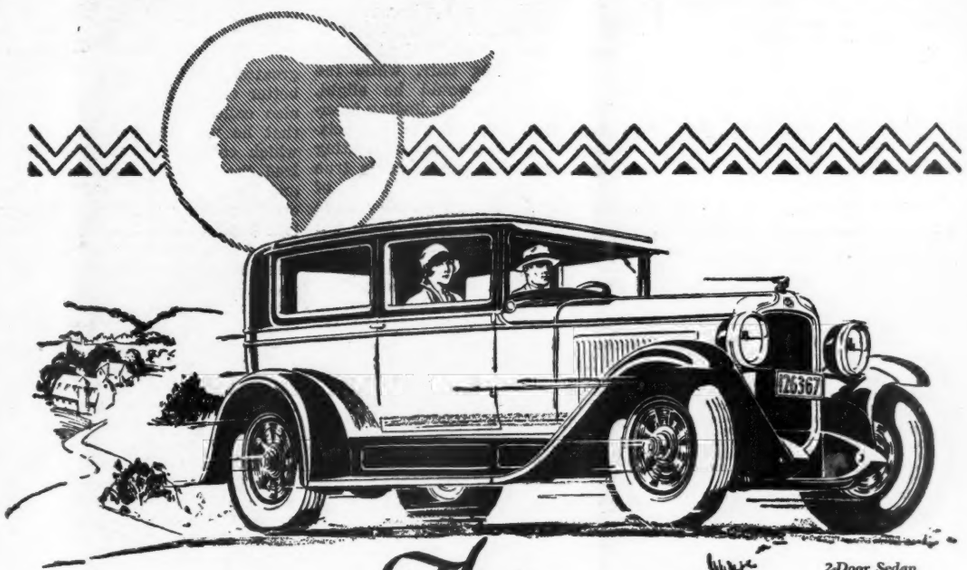

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Body by Fisher

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Whether you drive today's Pontiac Six on back roads of sand or gravel or over the paved highways leading into town, you will find it offering a new measure of economy in addition to greater power and greater speed.

A new, larger, more highly perfected carburetor—new intake manifolding—and new distributor design . . . these are among the advancements enabling today's Pontiac to obtain additional miles per gallon of fuel, ten per cent more power and greater acceleration and speed.

And, in addition, the Pontiac is smarter, more rakish in appearance as a result of its smaller, sturdier wheels and new, larger tires.

Now whatever the farm family asks of an automobile, the Pontiac Six provides in generous measure. *Style?* Here is the beauty of Fisher bodies and the luster of Duco colors enhanced by new and striking wheel equipment. *Performance?* Here is the power and speed of a 186 cubic-inch six-cylinder engine augmented by new carburetion, new manifolding and new distributor design. *Economy?* Here is the lowest-priced General Motors six and the thriftiest for farm or town.

See and drive today's Pontiac Six—a car that it will pay you to own!

*Coupe, $745; Sport Roadster, $745; Phaeton, $775; Cabriolet, $795; 4-Door Sedan, $825; Sport Landau Sedan, $875. Oakland All-American Six, $1045 to $1265. All prices at factory. Check Oakland-Pontiac delivered prices—they include lowest handling charges. General Motors Time Payment Plan available at minimum rate.*

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Many a man has flirted with the belle of a fancy dress ball, only to find, when the time came to unmask, that he had been attracted by his own wife. The same thing can happen in the case of a man's favorite smoking tobacco. In fact, it has. Read the following letter:

Boston, Mass.,
April 21, 1927.

Larus & Bro. Co.,
Richmond, Va.

Gentlemen:

This morning I had a smoking adventure worth recording.

Next to me in the smoking car a gentleman was puffing his pipe contentedly. I was not smoking at the moment, and the aroma of his tobacco intrigued me exceedingly. For twelve years I had smoked Edgeworth without being tempted by any other brand, but the fragrance emanating from the pipe of the gentleman beside me was so agreeable that I could not resist the temptation to speak of it.

"That is wonderfully fragrant tobacco you have there," I remarked. "Would you mind telling me the name of it?"

"It is Edgeworth," he answered.

We then congratulated each other upon our mutual good taste, and I decided that I would continue to use his brand and mine.

Sincerely yours,

S. H.

Somehow, really good things have that quality—they're better than ever when you discover them for the second time.

Take pure maple syrup, for example. When a man runs across real maple syrup after many years, it tastes even better than it did during his boyhood days.

That's the way it is with Edgeworth Tobacco. Finding it again is like meeting a good old friend.

To those who have never tried Edgeworth, we make this offer:

Let us send you free samples of Edgeworth so that you may put it to the pipe test. If you like the samples, you'll like Edgeworth wherever and whenever you buy it, for it never changes in quality.

Write your name and address to Larus & Brother Company, 13 S. 21st Street, Richmond, Va.

Edgeworth is sold in various sizes to suit the needs and means of all purchasers. Both Edgeworth Plug Slice and Edgeworth Ready-Rubbed are packed in small, pocket-size packages, in handsome humidors holding a pound, and also in several handy in-between sizes.

[ *On your radio—tune in on WEVA, Richmond, Va.—the Edgeworth station. Wave length 254.1 meters. Frequency 1180 kilocycles.* ]


# *Fruit Farm Engineering*

By E. W. LEHMANN

## Electric Light Not Expensive

ACCORDING to a report from the Ohio Extension Service, Mrs. John Foster of Madison county found by keeping accounts that electric lights are cheaper to operate than kerosene lamps. There should be no question as to the truth of this observation, especially if the electricity is put to other uses at the same time; also, if the lighting by kerosene is reasonably adequate.

However, if an electric plant is purchased for lighting only, while the operating expense would be slight, the overhead expense, including interest on the investment and depreciation, would make the cost of lighting rather expensive. The same is true if a farmer pays for the building of a power line so that he may have electric service and then uses the electricity only for lights.

The big advantage of electricity is that it may be used for many purposes and the amount then used for lights becomes a small item of expense. Every user of electricity should keep in mind the fact that the cost of a unit of electricity is greatly reduced as more is used.

A saving by the use of electricity for lighting over other systems of lighting that use a liquid or gaseous fuel, that is often overlooked when comparing costs, is the saving due to lower fire hazard.

## Are Farms Overequipped?

MY ANSWER to the above question is no. The farms of Illinois are not overequipped and the same is true in other states. I have no exact data nor is my answer to the question based on a lot of observations. It is based on some observation and on plain common sense. There is no question that many farmers are practicing false economy by doing without equipment they actually need.

There are a lot of people who are prone to explain the farmer's present financial condition with the statement, "Oh! the farmers are spending too much money for equipment!" Few of these people, many of them bankers, really analyze the situation. The real trouble often is not enough farm, or not enough land devoted to the particular crop where a particular machine is needed, or not enough enterprise whatever it may be, poultry, dairy or whatnot. It should be remembered at the outset that the items of labor and power are the big items of expense in farm production. The least expensive way to reduce the labor item is by the use of adequate equipment. No American farmer would advocate the use of a spade for preparing a seed bed, even though there were only an acre in the field to be prepared. However, to use a spade would certainly not leave the farmer open to the criticism that he is overequipped. Of course, if we were preparing a seed bed on a farm in China, where human labor is the cheapest thing available, then the use of a plow might not be advocated. But we are in America, where labor is costly and where time is a factor even in farm production.

If a plow is bought and there is only an acre to be plowed, the question might well be asked, "Is the man who buys the plow overequipped or shouldn't he have more land to plow?" Probably the man with only one acre had better hire the seed bed preparation done, but if he can't hire it done, certainly he shouldn't be expected to use a spade.

While visiting several farms recently, three things came to my attention, which have a bearing on this subject of overequipped farms. In the first place, I noticed a lot of old machines and very few new ones on this trip through the country. This fact was called to my attention by a progressive farmer who emphasized that the greatest need of many farmers was better equipment. This same farmer also called my attention to the fact that he recently bought a feed mill which cost him over $300. He realized the attitude that some bankers and landlords take relative to farmers purchasing equipment, so he made it a point to mention his purchase of a feed mill when he went to the bank. The banker immediately stated that the mill cost too much money and he wouldn't be able to make it pay, it was a poor purchase, there was danger of getting his farm overequipped, etc. This farmer had no difficulty in pointing out that by the use of the mill he was able to prepare a laying mash for his hens at a saving of a dollar for each hundred pounds fed, and at the present time, with a flock of 1000 birds, he was saving a dollar a day for chicken feed alone. In addition to this, he prepared, at considerable saving, feed for his dairy cows, in accordance with recommendations made by the agricultural experiment station.

The third thing of interest along this line was a farmer who bought two tractors of the type that were practical for cultivating corn and were equipped with four-row cultivators. This farmer had several hundred acres of corn and had formerly used one-row cultivators for the work. By means of the tractors and four-row cultivators, two men were able to do more work than eight men formerly did and at an actual saving of approximately 50 cents an acre for each cultivation. This is calculated on the basis of one man with a two-horse outfit, plowing seven acres a day at a cost of $6, and one man with a tractor plowing 28 acres a day at a cost of $10.50.

There is little danger of equipment such as I have mentioned, or any other equipment, being classed as surplus equipment, if it saves labor and reduces the cost of production on the farm. Farmers must have better equipment to lower the cost of production so as to meet competition. Progressive bankers and land owners recognize this fact.

## Motor Trucks for Marketing Fruits

THE USE of motor trucks for hauling fruit and produce direct from farms to markets is shown in a survey conducted in New York City by the United States Bureau of Agricultural Economics in co-operation with the New York Food Marketing Research Council. The investigation was limited to peaches, cantaloupes, tomatoes, apples and peppers, during the period July 20 to October 22. The survey does not give the complete total of motor truck receipts, but appears to account for the bulk of New Jersey motor truck shipments. During a single week at the height of the season, the truck receipts of peaches were 58

# *The Fruit Market Review*

*(From preceding page)*

per box, the orange shipments were credited for $26,902,389 of the total returns. The tangerines, at $5.28 per box, were valued at $2,121,293, and the grapefruit, at $3.28 per box, was valued at $20,729,044. The value of the express shipments was placed at $1,601,304. Even though production was considerably lighter than the preceding season, returns were higher."

### Northwestern Prunes

Washington, Oregon and Idaho together ship about 3000 carloads of fresh prunes each summer. Idaho is credited with half the total for these states, and shipments from Oregon usually exceed those from Washington by a couple of hundred cars. Hot weather and other troubles during the growing period substantially reduced the crop around Walla Walla, Wash., but it was believed that the remaining production would be more profitable in consequence of the lighter output. The clearing-house plan is again in operation this year, and it is hoped to maintain prices at a fair level. The California crop is out of the way and competition from that source is avoided. California shipped 3300 cars of fresh plums and prunes this season, as against 2780 cars in 1927.

### Other Fruits

The August forecast for pears was 23,279,000 bushels. Last year's crop was only a little over 18,000,000 bushels, but the record 1926 outturn was over 25,000,000. It is expected that 14,864,000 bushels of the 1928 crop will be produced in Pacific Coast states. Picking of northwestern pears was retarded as long as possible to allow the California crop to be absorbed to the fullest extent and to permit as great a price recovery as could be expected. By early August, California had marketed 5500 cars of pears, compared with 3300 to the same time in 1927. California's total for last season was 9200 cars.

Efforts were made this summer to interest additional cherry growers in the Pacific Northwest in the brining of part of their crop for the maraschino trade. One grower at The Dalles, Ore., put into brine three carloads of Royal Ann Cherries and sold them on a satisfactory basis.

The co-operative (federal-state) shipping-point inspection service in important producing sections last season inspected 41,200 cars of apples, 38,600 cars of grapes, 6640 cars of peaches, 5735 cars of pears, and 2000 cars of fresh prunes, besides heavy inspections of other fruits and vegetables. This work covered 45 per cent of the total carlot shipments of apples, 47 per cent of the movement of grapes, 16 per cent of the total peach shipments, 31 per cent of the pears, and 33 per cent of the prune shipments. The grand total of 211,000 cars of all products inspected at shipping points during the season was about one-fifth the total carlot shipments. The high percentages, especially for apples and grapes, are an indication of the value of this service to growers, shippers and receivers, and of the favor with which the inspection work is generally received.

per cent of all peach receipts, apples 78 per cent, tomatoes 52 per cent, and peppers 16 per cent. Cantaloupes arrived by truck from Maryland, Delaware and New Jersey, but railroads carried the bulk of this product from each of these states.

Some wholesale dealers do not like the motor truck service because they cannot hold the truck operator liable for injury to fruit and produce during the trip to market, whereas they can bring claim for damage against railroad companies. No other objections from the point of view of the dealer were reported. Many dealers take their own trucks to the producing section and buy direct. This suits the grower because he sells for cash and need have no further concern, though other local dealers sometimes complain that the country markets are upset by this direct buying.

## Repairing the Refrigerator

THE REFRIGERATOR which needs some attention can best be put in good condition during the late fall or early winter when its use can be discontinued with the least inconvenience. The refrigerator box made of wood is more liable to give trouble than the one made of steel and porcelain lined.

In either type, the first step to put the box in first-class condition is to thoroughly clean it. If the box is made of a nonabsorbent material, cleaning may be the most important part of the job. However, a coat of enamel may be needed.

If the box is made of wood, there may be evidence of swelling and the doors may be hard to open and close, due to absorption of moisture. In this event, let the box dry out thoroughly before proceeding. To get the best results, this work must be done at a time when the box can be taken out of service for several days with the least inconvenience.

After the box is thoroughly dried out, the next step is to make it as nearly moisture-proof as possible. With the ordinary iced refrigerators, applying a coat of white enamel is no doubt the best remedy. If an electric refrigerator box has given trouble due to swelling of the doors, steps should be taken to eliminate the trouble.

The temperature in an electric refrigerator is much lower than in an icebox, therefore, there is little moisture within the box. What moisture there is largely accumulates on the cooling unit rather than on the inside of the box. More trouble is liable to occur from moisture which accumulates on the outside. This accumulation may be due to leakage of cold air around the doors or the loss of cold through the walls of the box. If the box is not as carefully insulated as it should be, on a damp, humid day moisture will be noted on the outside, especially if the box is located in an unventilated room. To prevent this moisture which collects on the outside from gaining entrance into the wood, apply a coat of varnish if the box has a natural finish, otherwise a coat of enamel of a suitable color.

On most wood boxes, the trouble is likely to occur right at the door. This is usually due to the leakage of cold air at this point, which results in a large amount of moisture accumulation at both the top and bottom of the door. More moisture is liable to be found at the bottom than at the top of the door, for two reasons. First, the door is liable to drag and may not close as tightly at the bottom as at the top, and, second, the cold air naturally blows toward the bottom of the box. The first step toward remedying such a condition is to see that the door fits absolutely tight.

I recently examined an electric refrigerator with a wooden box where this condition existed. In this case new doors had been secured, but they did not remedy the condition because the new ones did not fit any more tightly than the original ones. The edge of the doors appeared tight, but it was evident that the cold from the inside passed through only about a half inch board, and the opportunity of actual air leakage was very great, especially at the bottom of the box. The remedy for a condition of this kind is a tight door. This should be accomplished by applying two strips of rubber packing, one near the inside edge and the other near the outside edge, so that as the door is closed an air pocket or dead air space is formed between the two strips of packing.

## Machine Methods

IT IS EVIDENT to every farmer that his biggest opportunity for success as an individual lies in reducing the cost of production and increasing the total number of units produced. The man who can reduce the cost per unit of product and can increase the number of units produced to a sufficient extent has his success assured. Industrial production is built on this idea. By the use of machines of production, greater production per person has resulted in a lower cost per unit produced.

Hand made shoes cost many times as much as machine made shoes in money and in hours of labor. When hand methods were coupled with the crude equipment of 75 years ago, 10 times as much labor was required to produce an acre of corn as at the present time with the most improved equipment. This means that in bushels of corn produced by the most efficient method, a person's time is worth 10 times as much now as 75 years ago.

Cheap labor and a low standard of living go hand in hand with inadequate equipment in agricultural production. In those sections where poor farm equipment is available, the farm income is low and the result is poor homes. The man with inadequate equipment, whether he produces apples or shoes, cannot satisfactorily meet the competition of the man who has satisfactory equipment.


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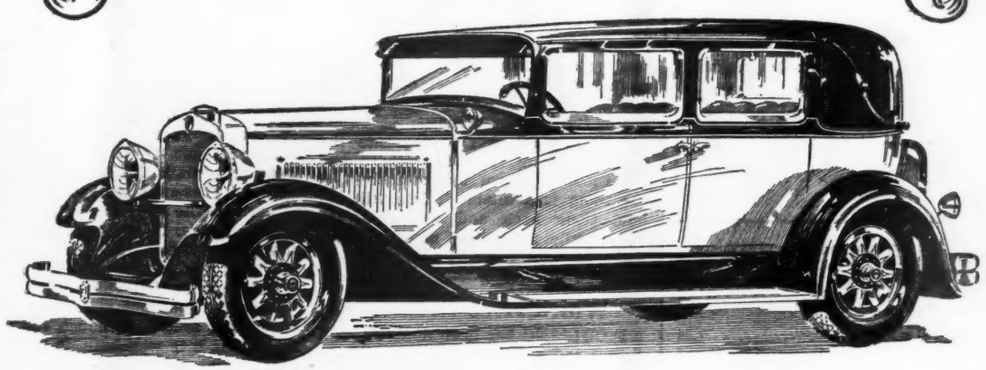

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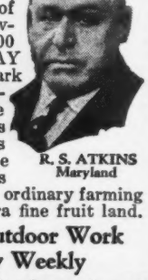

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# *Fruit Farm Poultry*

By RALSTON R. HANNAS

## Early Maturing Pullets Are Best Layers

IN EVERY flock of growing chickens there are always some that grow faster than the others. Observations and experiments have shown that it is these early developing pullets that are the best ones to select for the laying flock. They will start laying sooner than the others and will keep it up longer, provided they are fed a good laying ration and are fed in such a way as to maintain body weight.

Occasionally, some will develop sexually, that is, their combs will redden up and become large, and these birds will lay eggs. They may make this development at the expense of their body growth. Such birds should be given a little longer time to put on more growth and weight before expecting them to continue laying. This is done by cutting down the protein in the growing ration, cutting down the meat scrap to about 5 to 10 per cent, and feeding heavily of grain. Follow this procedure for about two weeks.

Birds that have made good growth and are not undersized are all right to encourage to lay. Feed them a regular laying mash in hoppers and feed grain at the rate of about 12 pounds per 100 birds per day if they are Leghorns and 14 pounds if they are of the heavier breeds.

It is a good plan to separate the early maturers from the others and put them in a pen by themselves, if the room is available. This will not hold them back and will give the other pullets a better chance to develop.

## Which Hens to Keep?

IF CULLING has been done throughout the summer as it should have been, the part of the flock that remains at present ought to be a pretty fair bunch of birds. This does not mean that all of these should be held over the winter to be used as breeders. Some of these birds that remain may have some undesirable characteristics, and some of them may have been late starters, that is, they probably began to lay in late winter, but have held up pretty well through the summer. While such birds may have laid a rather large number of eggs, they are not desirable birds to breed from, since early laying with continued production is wanted.

Continue culling during the month of September. If birds are laying in the latter half of this month, the chances are that they are the best birds of the entire flock and are worth breeding from, for even those that were referred to above as late starters will not always hold up late. It is early laying, and continued production up into the fall that are wanted in the flock. So now is a good time to keep an eye on the flock for the purpose of identifying those that are to be held over as breeders next winter and spring.

## Early Fall Chores

THERE ARE some chores that can be done now, in fact, should be done now to get the houses in readiness for the winter layers. Now is a good time to make any necessary repairs to the houses, such as repairing leaky roofs, putting new window lights in the windows, putting new muslin in the frames for the openings that are kept open most of the time, making glass substitute windows if these are to be used during the coming winter, repairing nests or dropping boards, nailing on loose boards where necessary, cutting new windows in the house where needed and boarding up those that provide too much air.

That is only a part of it. The rest includes thorough cleaning and spraying. This means removing all movable fixtures from the house and cleaning and disinfecting them out in the sunshine. It also means sweeping down the walls of the house, scraping the dropping boards, and sweeping out all litter and dirt. Follow this with thorough disinfection.

Replace the fixtures, put fresh nesting material in the nests and relitter the house with clean new litter.

Hens that are left in this house should be deloused with some good lice powder or with a powder known as sodium fluoride. If proper spraying was done so that the material got into the cracks, there should be no trouble with mites.

## If You Build a New Poultry House

VERY LIKELY the present quarters for your chickens are not exactly what you would like to have for them, or perhaps the building they are using at present is only a makeshift, or perhaps the flock has outgrown the present house. In any of these events, you will need to build a new house so the birds will be properly taken care of this coming fall and winter.

It really does not make any difference what kind of a house you build as long as it is well built, is free from cracks that will let in cold drafts in winter, the birds are not crowded in it, and there is provision for plenty of light and fresh air.

This latter does not mean that the house must have so much fresh air that it will be cold; it must have fresh air in the form of good circulation or good ventilation. There are many kinds of plans for poultry houses that can be secured. State colleges and experiment stations will be glad to furnish such plans for nothing.

In spite of the kind of plans you use, there are certain things that will have to be considered. First, at least four square feet of floor space per bird should be provided so that there will be no crowding. Have as many fixtures and as much equipment off the floor as possible so the birds can have the benefit of the floor space.

Second, allow five birds to each nest, or if trapnesting is done, allow only three birds to each nest.

Third, allow about eight linear inches of roosting space for each bird.

Fourth, build dropping boards under the roosts with the boards running from front to rear instead of from side to side, to make these boards easier to clean.

Fifth, allow about one linear foot of feed hopper space for each four birds.

Sixth, place one or two small windows, depending on the size of the house, under the dropping board to provide light for the birds, making it easier for them to see the grain that is thrown in the litter, to provide ventilation for the house in the summer, and to prevent the birds from scratching the litter to the rear of the house. These windows can be about one by two feet in size.

Seventh, provide a stand for the water pan, so it will not have to sit on the floor and wet the litter.

## Early Housing Is Best for New Pullets

IT SELDOM pays to let the new pullets stay out on the range until late in the fall. The earlier these birds can be housed after they start to lay, the better. In fact, if they can be gotten into their permanent quarters before they really have begun to lay in earnest, so much the better.

When the combs of the new pullets begin to redden up and the first pullet eggs appear, is a good time to put these birds in their winter laying house. The house should have been cleaned and made ready for them, as described elsewhere on this page. As the pullets have not been used to scratching in deep litter for their grain, it is a good plan to put only a scant amount of straw or whatever other litter is to be used in the house until the pullets get the idea that the grain is on the floor in the litter. The amount of litter can be gradually increased until there is about eight inches in the house.

It is a good plan, also, to keep the pullets shut in after they have been put in the laying house, so they will be under better control as far as feed is concerned—the scratch will be on the floor and the laying mash will be in hoppers before them. If desired, the pullets may be allowed out in the runs after about two weeks, as they will have become accustomed to the house by this time and will know where the feed is. It is better to get these birds in the house before they have laid a great many eggs so they will become entirely accustomed to the house and will not be thrown into a molt, and out of production by moving after they have laid for some time. They will also become used to laying in the nests and will not lay floor eggs.

It is better, also, to get them in the house before they have contracted colds by being allowed to roost in the trees on cool and damp fall nights. Birds with colds now are apt to be at a distinct disadvantage for the rest of the fall and winter.

## Storage of Feed

MUCH trouble with moldy and spoiled feed could be avoided if a little care were given to the way in which it is stored. One thing that will help in this regard is the storing of feed on boards instead of directly on cement floors.

If two by four's are laid on the floor and the bags of feed piled on these in rows, there will be less danger of spoiling, there will be a better circulation of air throughout the feed, and it will be an easier matter to fight rats, for rat bait can be more easily distributed among the feed bags and cats will have better access to all parts of the feed pile in fighting rats.

The inspection and repairing of roofs to prevent rain from dripping on the feed and spoiling it will save much money both in feed and in birds that might die or be thrown out of production by eating such feed. It is a good plan to use all old feed first rather than use a lot of new feed as soon as it is delivered—better see that the new feed is not piled on top of the old feed, for if the old feed is allowed to stand, it might be older than is thought when it is desired to use it.

# Fruit Farm Beekeeping

By HARLEY F. WILSON

## Feeding Bees in the Fall

DURING the month of September, each colony of bees should have more stores in the hive than the bees can use. Every beekeeper who is following improved methods will have stores held over from the summer honey flow, and extra combs of honey should be given to the bees whenever the supply in the hive falls below two solid combs of honey.

If honey is not available, then the beekeeper should resort to artificial feeding. There remains then but one source of food, and that is sugar syrup. Feeding sugar syrup may be an undesirable practice because it creates in the minds of the public the idea that honey is frequently made from sugar syrup. Our beekeepers, of course, know that this is not true, as the National Pure Food Laws do not permit adulteration of foods, and honey made from sugar syrup has no flavor.

It is also true that the process of feeding sugar syrup is too costly to even attempt its use in the adulteration of honey. The feeding of sugar syrup on the part of the beekeepers is an emergency case, and sugar syrup should be used only when honey is not available or to prevent winter losses by dysentery.

## Corn Sugar

THE GENERAL public of the United States cannot in any way be aware of the great service that the beekeepers of this country have rendered to them in defeating the enactment of the law which would have made it possible for corn sugar to be labelled sugar without the use of the word "corn" and thereby bringing about changes in our Pure Food Laws which might permit general adulteration of all products.

According to the estimates of the chemists, corn sugar does not contain the same sweetening values as beet sugar and cane sugar. All samples of corn sugar fed to bees in an experimental way caused serious results. It seems to be poisonous to them, and unless better refining methods can be developed, it is unsafe for any beekeeper to use corn sugar, even though it may be cheaper than beet or cane sugar.

## Milk and Honey

HONEY and evaporated milk, properly blended, give results that are particularly appealing, according to articles being sent out by the Educational Board of the Evaporated Milk Association, Chicago. They further state that honey may be used as a substitute for sugar in any food, and its use always gives a pleasing, delicate flavor.

## Heating Honey Prevents Fermentation

HONEY fermentation is caused by yeasts which seem to occur in honey at all times and under proper conditions will grow rapidly and spoil the honey for table use. It has been found that even sealed honey may be high in moisture content and that fermentation is likely to start at any time.

Fermentation can be prevented by heating honey to 160 degrees Fahrenheit, putting it in containers while still hot, and sealing the containers. Honey that is just beginning to ferment can be heated and the fermentation taste removed. In case fermentation has gone so far that the honey flavor has been spoiled, and if there is no American foulbrood present in the yard, the honey can be used for feeding as winter stores without danger of the winter losses being greater than if the honey had not fermented.

## Organization Developed to Help the Industry

AN ORGANIZATION called the Bee Industries' Association of America was recently developed through the co-operation of nine of the bee supply dealers of America. The principal purpose of the association is to enlarge the honey market by advertising and by giving out useful information designed to increase public appreciation of the value of honey.

This organization has created what is known as the American Honey Institute. Dr. H. E. Barnard, a well-known chemist of Indianapolis, Ind., has been engaged to take charge of the institute. The plans of the institute are to collect honey literature and data from libraries and government departments and to secure all available data on the nutritive value of honey, the value of honey in medicine and such other information as may come to light.

The institute will give out information to food concerns, such as the flour and baking powder industries, cheese manufacturers, grapefruit and orange dealers, manufacturers of breakfast foods, and canners. A fund amounting to $5000 has been guaranteed by the bee supply dealers for this work. The honey institute is already in operation.

## Preparing Bees for Winter

EVERY beekeeper should have in mind at this time the matter of getting his bees in first-class condition for winter, so that he may have good, strong colonies the following spring.

If the colonies have not been requeened within the past year, this should be done now, and plenty of stores should be provided for each colony to rear from three to four pounds of young bees during September.

Methods of packing bees for winter and winter protection will be given in the October issue.

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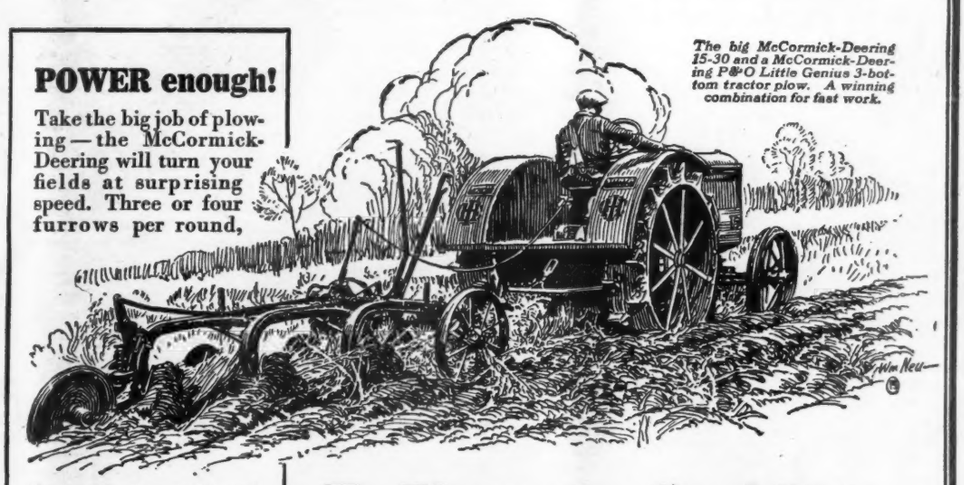

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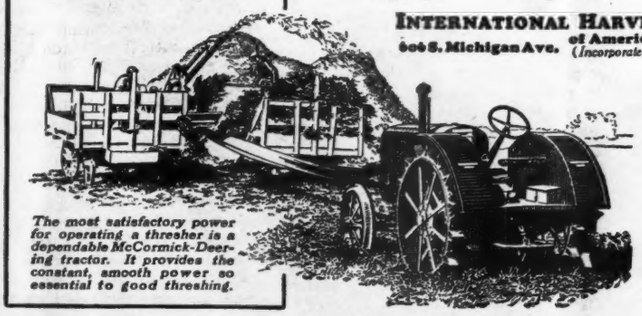

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"Our earth is degenerate in these latter days, and there are signs that the world is speedily coming to an end. Bribery and corruption are common; children no longer obey their parents, and every man wants to write a book. The end of the world evidently is approaching."

The paragraph you have just read sounds up-to-date, doesn't it? But it was written in Assyria, 2800 B. C.—*Exchange.*

# *CHATS with the Fruit Grower's Wife*

By HAZEL BURSELL

IN RECENT ISSUES of the AMERICAN FRUIT GROWER MAGAZINE we discussed the canning of fruits, vegetables and meats as a means of conserving surplus products and at the same time providing delicious foodstuffs for future use. This month we shall discuss another important means of accomplishing the same objects—jelly making.

The average housekeeper feels less sure of uniformly good results in jelly making than in any other department of food preservation. Rules that work perfectly one time seem to fail another time. Why should this come about?

"Why doesn't my jelly harden?" and "What causes my jelly to granulate?" are two questions being constantly asked.

It is an easy matter to say that there is something in the condition of the fruit, or that the fruit juice and sugar were cooked too short or too long a time. These explanations, while often true, do not help the housekeeper one bit in solving her problems. We have to go a bit deeper into the case and study the underlying principles of jelly making.

### Pectin Is Important

Three things are necessary for successful jelly making—sugar, acid (indicated by sour taste) and a substance in the fruit called "pectin." This pectin is the most important of the three, as it is the ingredient which, when heated, causes the juice to "jell." You have all found from experience that certain fruits, such as peaches and strawberries, won't make jelly. The reason for this is that they are almost entirely lacking in pectin. In order to have jelly with these flavors, we mix their juices with the juice of some other mild-flavored fruit rich in pectin, as the apple, quince or currant. Commercial pectins can be purchased. They are practical, successful and comparatively inexpensive, if time and labor are taken into consideration.

Slightly underripe fruits contain more pectin than ripe fruits, and we should, therefore, never select "dead" ripe fruits for jelly making. The pectin in overripe fruits changes to another form called "pectase," and this latter does not have the jelling property.

Fruit juices also lose this jelling ability when they ferment. A long, slow cooking process after the sugar has been added also changes the pectin, so that it loses much of this jelling quality. This means that speed in cooking is essential in the making of good jelly.

### Best Fruits Listed

Fruits vary as to the quantities of sugar, acid and pectin in their make-up. Some of the sourest tasting fruits contain more sugar than do some of the milder flavored fruits. Currants, for example, often contain four or five times as much sugar as do peaches, but the latter have much less free acid. An acid fruit is desirable in jelly making because it produces a more piquant flavor. A very sweet fruit will produce an overly sweet and flavorless jelly.

Here is a list of the most desirable fruits for jelly. Berries are included herein, even though they are not in season in the fall.

| | |
|---|---|
| Currant | Grape |
| Crab Apple | Raspberry |
| Apple | Loganberry |
| Blackberry | Gooseberry |
| Quince | Plum |

The first step in jelly making, then, is to pick and select the fruit. Juicy fruits, such as currants and raspberries, should not be gathered just following a rain, for they will have absorbed so much excess water as to make it difficult to get the juice to jell properly. Stems, leaves and foreign matter should be removed in picking the fruit over, though the apple cores (when apples are not wormy) and the small currant stems may just as well be left in place. In fact, the apple cores are usually rich in pectin and are therefore valuable in the jelly. If the fruit is dusty or sandy, it will be necessary to wash it, but the work should be done quickly in the case of soft fruits to prevent the loss of juices or the absorbing of excess water. The best method is to leave them in berry hallocks or to place them in a colander and run water through them.

### Leave Peelings On

The next problem is to separate the juice from the fruit pulp, which is accomplished by a preliminary cooking, in reality a slow simmering over a low fire. The large fruits should be cut up in smaller pieces to facilitate cooking. Do not remove the peelings as this means a loss of time and of the valuable pectin contained in them. A granite kettle with a tight-fitting lid is preferable as the juices will not discolor nor will the flavor be tainted. Do not allow the fruit to actually boil in this stage, otherwise some of the pectin may be destroyed. It should simmer slowly until tender.

Some authorities say that no water need be added to juicy fruits, but the writer believes in adding a certain amount of water to all types of fruits, as the flavor would otherwise be very strong and intense. If the fruits were picked slightly underripe and are of the jelling type at all they will jell plenty well enough when water has been added in the preparation of the juice. Do not "drown" the fruits with water, of course. A safe rule to follow is to add cold water to the fruit until you can just see it under the top layer of fruit in the kettle. Apples with exceptional jelling qualities, quinces and crab apples may take a little more water than the less juicy fruits.

### Assemble Utensils

Now that we have the fruit on to simmer, we should get all our other utensils and materials ready so that we can work efficiently and quickly when we do start the actual jelly making. The things to consider are sugar, utensils and firewood.

*Sugar.*—An amount sufficient for your needs should be measured up into a convenient pan. For exhibition jelly, it would pay to warm the sugar before adding it to the hot juice, as speed is a big factor in successful jelly making.

*Utensils.*—Wooden spoons for stirring; cotton bag, preferably pointed at the bottom, for straining the juice; jelly glasses, cleaned and sterilized; a pan of hot water in which to set unfilled jelly glasses; two measuring cups of equal size, for measuring sugar and juice respectively; covers and rubbers for screw-top jars; lids for glasses; paraffin and container for melting; neat labels to indicate the flavor of jelly and year of putting up; saucer in which to lay spoons, etc. In general, all utensils and jars must be perfectly clean and sterile. Jelly bags must also be sterilized by boiling.

*Firewood.*—A quantity of fine dry wood (of the kindling type) should be assembled and laid close at hand. You will need wood that will make a very hot blaze in a very short time. If another means of cooking that will make a hotter and steadier flame can be provided, so much the better.

### Drain Fruit Juices

Now we are ready to proceed with the actual jelly making. Crush the fruit in the simmering kettle and pour it into the jelly bag at once. Do not attempt to squeeze the bag at any time or the jelly will be "cloudy" from particles of pulp which will seep through the bag. For exhibition jelly, it may be well to strain the juice twice—the last time through a sterile flannel bag to insure a clear, sparkling juice. Patented racks may be purchased for holding the jelly bag while the juice is draining out. They are very convenient. If not at hand, a draining rack may be improvised, using a broom handle laid across two chairs.

As soon as some of the juice is drained out, begin to make the jelly, as the longer it stands the darker and duller the finished product will be. Measure one or two cups of the strained juice into a large, clean preserving kettle, place directly over the flame, and boil steadily and as rapidly as possible until it boils up once. Skim the scum off just before it "boils up." Be sure to choose a large enough kettle, as one- and one-half cups when it boils will fill a three-quart kettle.

Add the warmed sugar at once, using three-fourths cup of sugar to one cup of juice for all except the very acid fruits, which may require a "one to one" proportion of sugar and juice. The writer has found three-fourths cup to one of juice sufficient in every case except perhaps for gooseberries, Loganberries and sometimes currants. Too much sugar gives a sickeningly sweet jelly. Stir the sugar and juice until the sugar is dissolved.

### Do Not Overcook Jelly

Now boil rapidly, skimming once as it comes to the boil, until the bubbles begin to come slower and are about one inch in diameter, or until two drops come off the spoon at once, or until the jelly begins to drop slowly when a spoon is dipped in the boiling juice and held aloft. Remove from the flame and pour the hot liquid into the sterilized glasses which have been set close at hand in the pan of hot water. Measure out more juice, bring to boil, skim, add needed sugar, bring to boil, skim, and boil rapidly until done. Do not wash the kettle between cookings unless the sides should begin to scorch and need washing down. Repeat the process until all the juice has been cooked and poured into the glasses.

Overcooking and long, slow cooking are the causes of most failures in jelly making, as far as flavor, color and texture are concerned. Beware of both! Make the jelly on a bright, sunshiny day, and it will not only jell better because the surplus moisture will evaporate more readily in a dry atmosphere, but, if the jelly is not quite firm enough when cooled, it can be set out in the sunshine to finish jelling. It is better to err by slightly undercooking than overcooking the jelly.

### Cover with Paraffin

As soon as the jelly is cool and firm, melt paraffin and pour it over the jelly to keep out bacteria and molds. Write on the labels and paste them on each glass so that anyone can see the variety at a glance. Do not allow the glasses of jelly to stand around

without waxing for even a day after they are cool, as mold spores will light on the jelly and cause trouble later. The wax will shrink away from the sides of the glass to a certain extent, so it is best to use two thin layers of wax rather than one very thick one—let the first layer harden and cool before adding the second. Do not spare the paraffin when covering jellies, as it usually proves to be false economy. The wax can be washed and saved from year to year.

The storing of jelly is important. A dry, cool, dark place is essential for best results. Such conditions are unfavorable to the growth of molds or to fermentation.

### Six Tests for Jelly

Every housekeeper should know how to score her own jelly—then she will know when it is or isn't perfect, and can strive to make it "better and better" year by year.

Here are the tests for perfect jelly: (1) It should be clear and transparent and free from specks or bubbles. (2) It should be tender enough for a pen-knife blade to sink into it by its own weight. (3) When cut, the edges should be clean-cut and sharp. (4) It should stand alone, but quiver. (5) It should have the characteristic flavor of the fruit from which it was made, and it should not under any circumstances be "strong." (6) It should not be sticky or gummy, neither should it be brittle, but it should break.

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## September Recipes

### Best-Ever Dill Pickles

Soak selected, medium-sized cucumbers in cold water over night. In the morning, pack them in sterilized jars, using about two or three heads of dill to each half-gallon jar. Then pour over them the following brine, while hot:

3 qt. water
1 qt. vinegar
1 c. salt

Bring to a boil and pour boiling hot over the pickles. Seal the jars at once. Allow pickles to stand at least two weeks before using them. The brine recipe makes approximately enough for 4 half-gallon jars.

### Cherry Olives

Wash and pick over selected, firm Royal Ann cherries. Snip off the stems to within one inch of the cherry, leaving a short handle on each cherry. Pack the cherries in sterilized jars and pour over the following brine, cold:

1 qt. water
1 qt. vinegar (white malt)
1½ c. sugar
1 T. (rounded) salt

Let boil until dissolved. Cool and pour over the cherries in the jars. Seal and store. Brine recipe makes enough for 8 pints. Save this recipe till next year.

### Chilli Sauce

18 large tomatoes
6 large onions
6 large green peppers
10 T. sugar
2 T. ginger
3 T. salt
1½ T. cinnamon
1 T. mustard
1 T. cloves
1 T. nutmeg
5 c. vinegar

Peel tomatoes and slice them. Put onions and peppers through the fine knife of the food chopper. Boil all together for 2 hours, cooking slowly until of a nice consistency for a relish. Put in sterilized jars and seal.

### Pickled Onions

Scald and peel as many white onions as you wish. Drain, place in weak brine (1 c. salt to 1 gallon of water) for 48 hours, then drain again until dry. Pour together 1 cupful milk and 1 cupful water, add the onions and allow them to scald but not boil, or they will be softened. Drain, rinse them in cold water, and drain again. Put into sterilized jars and pour over them white wine vinegar. Add a blade of mace and a few small red peppers. You will have beautifully white pickled onions if these directions are followed out.

### Baked Pickled Peaches

7 lb. peaches
5 lb. sugar
1 pt. vinegar
1 oz. stick cinnamon

Wipe the peaches with a towel, then pack in a stone crock. Make a syrup of the vinegar and sugar, and add the cinnamon. Pour over the peaches and bake in a moderate oven (350 degrees) for one hour, having the crock covered with a lid or plate. When the peaches are done, do not remove the plate until ready for use. Store in a cool place. If they must be stored for some time, they may be placed in screw-top jars and sealed.

# Bitter Clover for the Orchard Cover Crop

By W. L. TEUTSCH

MELILOTUS INDICA, or bitter clover, is a winter cover crop which California orchardists have found of real merit. It increases the fertility of the soil, and a corresponding increase in the fruit or nut crop results. This comparatively new cover crop is being extensively used in practically every California county. It is a yellow flowered annual, which in its habits of growth resembles alfalfa, and it thrives on soil where alfalfa grows well. It is a mild climate plant, however, and will not endure in temperatures below 18 degrees Fahrenheit.

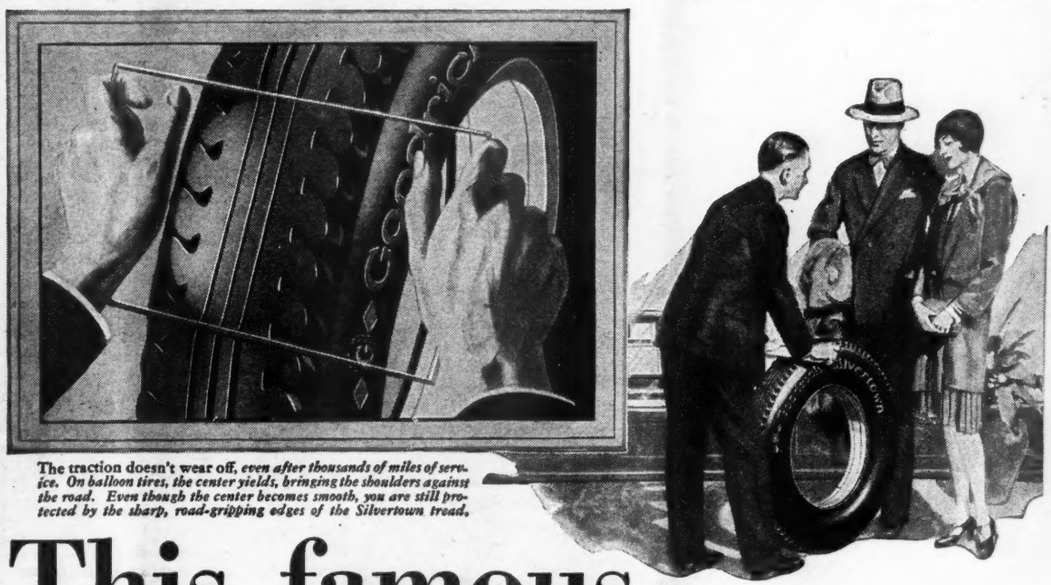
The seed of Melilotus Indica closely resembles alfalfa. One of the advantages of this crop is its cheapness, the price usually being from five to 10 cents per pound, and the rate of seeding, 20 to 25 pounds per acre.

Experience in California indicates that it is best to sow the seed on the dry soil mulch rather than in the moist soil just after irrigation. The irrigation furrows should then be made relatively close together to permit a complete wetting of the surface. Otherwise, a poor stand may result.

The average yield of green material from Melilotus Indica in California has been around 10 tons per acre, although as high as 40 tons have been produced. The only fertilizer which has proved generally beneficial is superphosphate applied at the rate of 200 pounds per acre at the time of seeding.

In tests at the Riverside Experiment Station, where nine different legume cover crops were tried, Melilotus Indica was found to give the greatest increase in yield to crops which followed it. In these trials nonlegumes, such as oats and barley, were used as check plots. Melilotus as green manure increased the yield of the crop following by 64.8 per cent; common vetch, 28.7 per cent; burr clover, 30.4 per cent; and Canada field peas, 43.3 per cent.

Melilotus Indica has also been shown to develop a much more extensive root system than vetch or peas. While it is an annual, a tap root is developed under average conditions in the six months growing period, which extends to a depth of six or eight feet. This characteristic of the plant is of great value in opening the plow pan, which is so common in many orchards.

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# Cash Prizes for Honey Locust Beans

THE AMERICAN Genetic Association is offering cash prizes for the best honey locust beans growing in the United States or Canada. They want long beans, sweet beans or heavy beans. The first prize is $25, and there are eight more prizes, making a total of $70. To participate in the contest, a five-pound sample of beans must be sent by parcel post to the American Genetic Association, Victor Building, Washington, D. C.

THE HONEY LOCUST

**Slightly reduced picture of part of honey locust bean analyzing 29 per cent sugar and weighing nearly an ounce per bean. The honey locust shows great possibilities as a forage crop and may prove of great importance as a source of sugar**

The association has found honey locust beans over a foot long that contained 29 per cent of sugar. This is more sugar than is to be found in sugar beets or sugar cane. When dried and ground, they make a stock food that has an analysis close to that of wheat bran in protein. There may be a valuable new staple crop here, and this important scientific association wishes to find the best honey locust trees for experimental purposes.

The honey locust tree has a remarkable list of qualities. It is beautiful and is a good timber tree with a strong, durable, and beautiful wood. It is a rapid grower.

Like the carob of Palestine and the algaroba of Hawaii, it is a legume gathering nitrogen from the air to make its own proteins. This also enables it to fertilize the earth for other plants. It is an open top tree through which much light can pass to crops below, thereby favoring a two-story agriculture, like the carobs of Algeria. It is a productive tree. One correspondent tells of a tree producing six consecutive crops estimated at 10 bushels each.

J. M. Preston of the Branch Experiment Station at Hays, Kans., gathering seeds for planting, reports a tree with a seven or eight-inch trunk producing 80 pounds of beans, and another tree in Manhattan, Kans., from which he gathered "about 400 pounds of pods." He reported that this tree had a trunk diameter of two and one-half feet, had a broad top, and bore in 1911 and 1912, but failed to bear in 1913.

Frequent reports of consecutive crops seem to indicate that the honey locust bean is a regular bearer, and apparently it can be expected to produce crops with greater regularity than most fruit or nut trees.

The honey locust bean is of large size. This should make the crop easy to harvest. The beans are often one foot or more in length.

This large size, taken in connection with their tendency to curl up, should make them easy to harvest. Perhaps large quantities could be raked up in a short time, even on ground that was not entirely smooth. Perhaps a special rake would need to be devised. Apparently the beans could then be picked up with a pitchfork and handled somewhat like hay.

Experience with the gummy Keawe in Hawaii would indicate that some easy method of grinding these could be found. Thus another concentrated food could be added to the dietary of the American farm animals.

# Wintering Grapes

WINTER INJURY to the vineyard is usually associated with too much rainfall during late summer and early fall, which prevents the newly formed grape buds from reaching maturity before freezing weather sets in, say horticulturists at the experiment station at Geneva, N. Y. This is said to be especially true if the vineyard is located on poorly drained soils, and it is believed that much winter injury may be prevented by proper drainage which removes the surplus water and allows the grape tissues to harden up before cold weather.

When cultivation of the vineyard is discontinued in July or August, the weeds should be allowed to grow without cutting, so as to let the weeds utilize as much of the soil moisture as they will, say the station specialists. Green manure crops sown after the last cultivation aid in drying out the soil, provided they do not shade the ground too much. Rye, wheat, oats, barley, and buckwheat make especially good cover crops, as they shade the ground very little, while rape and cowhorn turnips are less desirable.

Some winter injury to grapes will nearly always follow low temperatures, but the extent of the injury may be materially lessened by following the practices here recommended.


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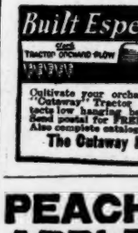

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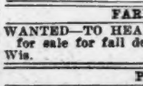

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100% BRAIN AND NERVE TABLETS! 100 TABlets, $3.50! Guaranteed! Sent C. O. D. N. M. Lewis, Silver Lake, Ore.

# The Principles of Water Softening

By WILLIAM T. DEAN

NO HOUSEWIFE need be told of the advantages of soft water. It is not generally known, however, how easily and simply water may be softened and thereby rendered fit for the laundry and bath and also made far healthier for human consumption. Since we have elected to make water our national beverage, why not have it always fresh, clear and free from unnatural metallic salts?

Rain water as it falls from the clouds, unless contaminated by smoke and soot, is pure distilled water aerated by nature and is the ideal water supply. Water is such a universal solvent that it is easily spoiled by storage in cisterns or seepage through foul soils. If it must pass through beds of limestone, dolomite and other minerals before reaching the well or stream from which we draw it, the result is "hardness" due to an excess of lime, magnesium or other salts.

Water is said to be "hard" when it c ntains these salts which make it so unpleasant to the touch, so difficult to lather and when clothes require long and hard rubbing with strong soaps or alkalies.

Water having more than five or six grains of "hardness" per gallon should be softened because of the well known advantages in the bath and laundry and for other reasons as vital.

Hard water combined with soap forms an insoluble scum which shows as a ring about the lavatory or bathtub and exists as a varnish filling the skin pores and leaving the hair harsh and gummy. Softened water easily forms a soluble lather with soap, washing away all dirt and leaving the skin smooth, the hair soft and brilliant and lavatories spotless.

Hard water deposits its "hardness" when heated and this appears as scale inside boilers, hot water heaters, stove water backs, quickly reducing the efficiency of water heating and eventually destroying the heating element.

The same action occurs in cooking: the insoluble lime and magnesia are deposited in the food, sometimes discoloring tender vegetables and always leaving indigestible solid minerals in the human body, increasing the tendency to certain diseases, such as goitre, gall and kidney stones, hardening of the arteries and rheumatism.

### How to Soften Water

It is so easy, so simple, so economical to soften the entire water supply that softeners are now almost as widely used as the indispensable home water supply system, which more than any other thing has emancipated the woman folk living outside the larger towns.

Certain natural sands known as "Zeolites" containing salts of silicon, a'uminum and other metals have the property of attracting the insoluble salts in water; hence to soften water it is only necessary to filter it through a bed of zeolite. If one had a natural bed of zeolite, or green sand as it is sometimes called, through which the water supply flowed before being pumped, that water would always be soft, but unfortunafely most of the softening effect of zeolite has been used up in forming our great beds of limestone and dolomite, so we find zeolite in locations where leaching by lime water has not been extensive.

After a time, the affinity of zeolite for lime and magnesia is exhausted and unless this affinity can be renewed the filter or softener is useless.

Common rock salt of the cheapest variety has the valuable property of renewing the zeolite, as it forms soluble salts with the lime and magnesia deposited by the water in passing through the filter beds.

After the charge in the softener has become exhausted, when it no longer removes all the hardness, it is only necessary to shut off the water outlet from the softener and put in a little salt or a strong salt solution and in a few minutes the charge is again ready to function. However, the salt water now in the softener, is not wanted in the water supply system, so it is washed away, when the outlet valve may be opened and the softened water again flows to every faucet.

Thus in softening water three things take place:

1. The water filters through a bed of zeolite until the charge is saturated with "hardness."

2. The "hardness" is dissolved with salt water.

3. The salty water carrying the "hardness" is washed out of the softener and it is again ready for service.

The size softener required in any case depends on the amount of water used and on its degree of hardness, which is expressed in number of grains per gallon.

These conditions affect the frequency of the washing out process with salt water. If the water is relatively soft and the use is limited, washing out may not be necessary for many weeks. A simple test for hardness is provided. It is only necessary to shake an ounce of the water with a few drops of standard soap solution to determine by the lather formed in the bottle whether the water is still properly softened or if a washing out is needed.

Softeners are so easily and simply operated that most plants are hand operated. If a suitable size has been selected, it is only necessary to wash the plant out once or twice each month and then only 10 or 15 minutes' time is required.

It is possible to soften water entirely automatically, but the complications involved and waste of salt solution, with much higher cost of plant, is not justified, particularly as all automatic plants require a certain amount of service and occasional washing out by hand in any case.

## To Keep Cider Sweet

CIDER may be kept sweet by bottling or canning it immediately after extraction, according to the New Jersey extension specialist in fruits. Sterilize the bottles, or jars, then fill with the cider to within one inch of the top. This allows for expansion when the juice is heated. Place a clean cork loosely in the bottle, then pasteurize. The wash boiler may be used for the container, with a rack to elevate the bottles. Fill the boiler to within two inches of the top of the bottles. Heat the water slowly and allow it to simmer for 20 to 30 minutes, depending upon the size of the containers. Never allow the water to approach the boiling point. Remove the bottles from the water and seal. Drive the corks tightly into the bottles, cut off even with the tops and dip into melted wax or paraffin. If glass fruit jars are used, the covers are placed on loosely before the pasteurization and then tightened when finished. New rubbers must always be used. It is not necessary to dip the jars in paraffin.


# A cent a pound More on 2000 pounds of Hogs

*An Advertisement of the American Telephone and Telegraph Company*

A MAN living near Clyde, New York, had 2000 pounds of hogs to sell. He telephoned a dealer who offered him nine cents a pound. He telephoned a second dealer who offered nine and a half cents, and a third who offered ten cents. He sold to this dealer. If it had not been for the telephone calls he probably would have sold to the first one. Amount earned by telephoning, $20.

The telephone earns money for the farmer. Finds where and when to sell at the best price. Runs rush errands in emergencies. Orders a machine part when there is a breakdown. Calls relatives and friends. Brings the doctor in a hurry. Pays for itself many times over.

The modern farm home has a telephone.

# A Few Cents Lifts Woman's Hardest Work

WHO WOULD not save walking back and forth from a hot stove to an ironing board on a scorching day if 15 cents would obviate it?

That is how much it costs to run an electric iron for a three-hour ironing, reports W. C. Krueger, New Jersey specialist in rural electrification. Good irons can be bought for from $2 to $8, depending on size.

Few persons could be found who would be willing to turn a washing machine for a farm washing for 50 cents. According to Mr. Krueger, not one washing but a whole month's farm washings can be done in an electric washing machine for that amount. He points out that although gas engines and other sources of power are occasionally found in use, the electric motor is infinitely superior, as there are no exposed and dangerous gears or belting, practically no noise, and no trouble in starting.

For persons having large ironings, Mr. Krueger recommends the consideration of electric ironing machines, sometimes called "mangles." Such an ironer will do the ironing in about one-fourth of the time required for hand ironing and the work is done with less effort and discomfort. He says that some skill is required to do the less simple articles, but when such skill is acquired, the ironer can be used on practically all the clothes. Ordinarily, the operating cost is generally a little higher than it is for ironing the same quantity of clothes with a hand iron. Skilled operators, however, have done ironing at a lower cost than would have been required for hand ironing. Energy consumption for a family of six has been found to vary between six and 12 kilowatt hours a month. Often a special rate is available on application, making the cost of operation surprisingly low.

The 30-inch length ironing machine is the most popular size, according to Mr. Krueger.

# September Patterns

**No. 3256—Decidedly Chic.**
Designed in sizes 16 and 18 years; 36, 38, 40 and 42 inches bust measure. Size 36 requires 3 yards of 40-inch material with ⅝ yard of 40-inch contrasting.

**No. 2544—Charming and Practical.**
Designed in sizes 16 and 18 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 3⅝ yards of 40-inch material with 6 yards of binding.

**No. 3383—Perfect Comfort.**
Designed in sizes 16 and 18 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 3 yards of 40-inch material with 1½ yards of 3-inch ribbon.

**No. 3450—Tempting!**
Designed in sizes 16 and 18 years, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 3⅝ yards of 40-inch material with ½ yard of 40-inch contrasting and 1⅝ yards of ribbon.

**No. 3394—For the Smart Sub-Deb.**
Designed in sizes 10, 12, 14 and 16 years. Size 12 requires 2 yards of 40-inch material with ⅜ yard of 32-inch contrasting.

**Embroidery No. 712—Border in Single Stitch.**
Pattern includes 4 yards of border 2 inches wide. Suitable for children's dresses, nursery hangings, etc. (Blue and yellow.)

**No. 2512—Comfortable Sleep-Ins.**
Designed in sizes 2, 4, 6, 8, 10 and 12 years. Size 8 requires 2½ yards of 36-inch material.

**No. 2531—Attractive Apron.**
Designed in sizes small, medium and large. The medium size requires 2 yards of 36-inch material with 7 yards of binding.

Patterns may be secured by mail, at 10 cents each, postpaid, from AMERICAN FRUIT GROWER MAGAZINE PATTERN SERVICE, 22 East 18th St., New York.

# Successful Co-operation in Growing and Selling

(Continued from Page 5)

prices offered. He also handles collections for the company. At the close of each fiscal year a financial settlement is made and each member is paid according to the number of bushels he turned in and the profit that the organization realized per bushel on the particular grade accredited to him. Expenses for the year are pro-rated in the final reckoning according to the number of acres owned by each member. In this manner, the expenses of conducting the enterprise are divided in the fairest possible manner and each member profits according to the amount and quality of the fruit turned in.

There are two kinds of expenses that must be handled in a different manner, however. One is the ordinary caretaking expense, including cultivation, worming, spraying, pruning and picking the fruit. This expense is, of course, charged direct to the owner. The other expense, which is classified as general orchard expense, includes supervision, office expense, advertising and so on. This expense is distributed among the orchard owners on a basis of the number of acres that each grower has under cultivation. Expenses of all kinds are reduced by this system to a minimum.

On the whole, the Tallulah Apple Growers' Company, although organized and incorporated only a little over a year ago, has demonstrated that apples can be grown co-operatively and at a profit.

All members of the company have signed a five-year contract ending in 1931. But if the venture proves as profitable during the next four years as it has during 1927, most of the owners will be "in the clear" by the end of that period and will be glad to sign on for an indefinite time.

Unified management, insuring a saving in purchases, and efficiency in orchard management and control.

Pooling of all apples produced and marketing strictly according to quality and grade, each producer being credited with the number of apples he contributes to each grade.

A marketing system that handles the situation so as to eliminate gluts on the market and at the same time place the apples of the company on the markets paying the highest prices while the prices are highest.

Expenses pro-rated according to the acreage held by each owner, and profits divided according to the number of apples produced and the grade made by each grower.

These are some of the things that are making the Tallulah Apple Growers' Company an outstanding success in Georgia.

# Is Your Name On the Package?

(Continued from Page 5)

in a way, but no chain store organization or grocers' organization is interested in a carload of fruits or vegetables that is not standardized to the point that each package has a very close commercial value to all others in the car. Otherwise, they could not be sent out to the several stores on an equal per package charge.

Unstandardized cars can now be sold to advantage only by breaking the carload and selling each separate package on its merits, which is expensive, unreasonable and unpardonable, as the cost of properly separating and labeling the different values at the point of loading is less than the actual cost of thorough inspection at point of sale. The results are that such cars are usually lumped off at an approximate average value that will make the buyer perfectly safe. It is not merchandising.

### Growers Should Co-operate

Few individual growers have sufficient volume of their own to load cars with one grade and variety. Wonderful benefit can be attained in forming local packing associations, where the product of the neighborhood can be assembled, properly graded, varieties grouped together and loaded as nearly in straight cars as the local supply will warrant. Local dealers have been able to exist for years on this one advantage, and in neighborhoods where suspicion of your fellow man exists to too great an extent, or where none of them will play ball unless he is pitcher, the dealer method is your only salvation; but do not get angry with him when he is not interested in certain varieties you are producing, or when he brings your product up to the nationally recognized standards. You must realize that while he is dealing with you as an individual, and the value of your product must be more or less estimated, he must market it in competition with a standardized article, and he has to do one of three things: Buy your fruit so low that he can undersell, sufficient to more than cover the difference in quality in the standardized article; pay you the standard price and so standardize your fruit to secure for himself the full market value; or go out of business.

In some states there is a law that no fruit shall be shipped without the packer's name and address thereon. However, it is unfortunate that many growers view this as a penalty instead of a privilege. Taking this view, they make the name and address as inconspicuous as possible, merely to comply with the law. This gives them no commercial advantage in financial returns. The point is, if you are not sufficiently proud of your pack to put your name on it for advertising purposes, pack it over until you are.

# Improved Varieties of Blueberries

(Continued from Page 4)

unexcelled. Naturally, this popularity creates a high price level. From the grower's standpoint, it is unusually free from serious insects and diseases, in fact, at the present time it requires no spraying. The berries hang well on the bushes and therefore do not need to be picked as promptly as most small fruits. This is very important in periods of bad weather or over-supplied markets. The fruit also keeps and ships very well. Once a blueberry plantation is established, the grower is faced with a life work, for the plants should live a hundred years or more if they are given good care.

### Limiting Factors in Development of Industry

There are two limiting factors in the development of the cultivated blueberry industry. One is the type of soil required, while the other, which is probably even more important, is the difficulty of propagating the plants.

It has already been pointed out that an acid soil is absolutely necessary for the well-being of the blueberry plant. A combination of sand and peat is very satisfactory. Heavy soils should be avoided, while the prospective grower should also be careful with regard to muck soils, for they are likely to be neutral or alkaline in reaction. The soil should be well supplied with moisture, but not poorly drained. The fact that a high bush blueberry plant can suffer from poor drainage may seem strange to those who have seen a wild blueberry bog almost entirely submerged during the spring and fall, but the careful observer will have noticed that each blueberry plant is growing on a hummock or mound where good drainage is assured, at least during the growing season. Cultivated blueberries at Whitesbog show plainly, in a few places, the ill effects of poor drainage. Just how wide a range of soil conditions the blueberry plant will succeed on has not been definitely determined.

The difficulty of propagating the blueberry has been the chief obstacle in the way of rapidly developing the cultivated blueberry industry. Budding and grafting are out of the question, except for experimental purposes, for the reason that new shoots are continually being sent up from the crown of the plant below the graft union. If plants are already established, mound layering is the easiest method of propagation. However, only a small number of rooted shoots are obtained from each plant by this method, and it is necessary to sacrifice the crop of the parent plant. The rooting of cuttings is a slow, difficult task; in fact it is a task for an experienced propagator. Even then the percentage of rooted cuttings is low, averaging about 25 per cent. No doubt the scarcity of propagating wood of the improved varieties, together with the difficulty of propagation, accounts for the present high prices of the plants. Various experiment stations are working on the problem and undoubtedly considerable valuable information will soon be available.

### Varieties of Blueberries

Eleven varieties of improved blueberries have been developed through selection and breeding. Experiments in New Jersey and Michigan indicate that Cabot is the best early variety, Pioneer the most desirable for midseason, and Rubel the finest for a medium late berry. It is interesting to note that two of these varieties, Cabot and Pioneer, were developed by Dr. Coville by means of hybridizing; the other, Rubel, was one of Miss White's selections from plants in the wild bogs. Of the minor varieties, Adams is early in season; Sam, Rancocas, and Katharine midseason; Grover, Harding, and Dunfee late. Katharine, another of Dr. Coville's hybrids, would be one of the finest varieties if it did not adhere to the bush so tenaciously, a fault which results in the skin tearing when the fruit is picked.

### General Care of the Plantation

The blueberry plantation should receive much the same care that is given the average bush fruit plantation. Clean culture and a cover crop are essential. Cultivation should be shallow, as the roots are near the surface. When the drainage is poor, mounding the plants has been found to be beneficial.

A special fertilizer mixture analyzing 4-18-5, composed of 100 pounds of nitrate of soda, 260 pounds of rock phosphate, and 40 pounds of sulphate of potash, applied at the rate of 400 pounds to the acre, has been found to give good results. A secondary application of nitrate of soda at blossoming time has been used at Whitesbog with a decided increase in the size of the plants receiving the fertilizer.

There is nothing unusual about the harvesting and handling of the blueberry crop except the ability of the fruit to hang on the bushes for several days without serious loss in any way. The improved blueberry is a fancy product and should be handled as such. Picking with scoops or rakes, or batting them off as is often done with the wild berries should not be practiced with these better varieties.

The limited amount of information available would indicate that a mature blueberry plantation should yield from 3000 to 3500 quarts per acre.

# Telephone Widens Market for Fruit

IN THE HANDLING of perishables such as fresh fruit no device has shown greater flexibility or yielded more certain results than the long distance telephone. Especially is this so where rapid means of transportation have brought about keen competition between producing areas that a few years ago supplied only the territory immediately surrounding them.

To the salesman who can put his knowledge of the field into intelligible English, the long distance telephone is a powerful weapon in breaking down a sales resistance that might even withstand a face to face interview. Not only does long distance almost command an audience, but the prospect is in a more or less receptive mood to one who is willing to pay something to talk to him.

As produce markets overlap more and more, examples multiply of the extensive and systematic use of this method of communication.

From the little town of Onancock, Va., on the peninsula between Chesapeake Bay and the Atlantic Ocean, there goes out, during the month of May, a flood of telephone traffic that reaches to Boston on the North and to Chicago on the West.

Onancock is the chief supply center for strawberries in May for the entire Northeast and Midwest. Buyers from all over this section buy up the berries as they are brought in to market. As soon as a buyer has a carload together, he turns to the telephone to dispose of it. Often he ships the fruit off and makes his sale over the telephone while it is still on the road; again using the telephone to divert it to the purchaser.

From daylight to dark the wires out of this little town are working at capacity to handle these extensive long distance campaigns. So heavy has the traffic to the North been that a direct telephone circuit has been installed all the way to New York, cutting out all intermediate switches.

A wholesale fruit firm in Montreal calls its customers by long distance to find out their requirements on the day that the firm's trucks are covering that locality. They also accept reverse charges where the amount of the order exceeds a certain figure. This firm sometimes makes 80 long distance calls a day.

A fruit company in Missouri has a bill for long distance ranging from $500 to $800 a month, yet finds it the most economical method of selling its fruit. The explanation is found in the old adage of the "early bird," as the telephone enables the firm to reach customers earlier in the day than its competitors can reach them with salesmen.

In addition to these cases where the telephone sales work is more or less reduced to routine, many fruit companies have found it useful in an emergency. The Bearman Fruit Company of Minneapolis found itself, on one occasion, with eight more carloads of peaches than it could dispose of through its regular channels. The company's "long distance salesman" disposed of the cars in four hours. In 12 calls at a cost of $37.35, he sold them for a total of $9009.

The Del-Bay Farm, Inc., of Bridgeton, N. J., has a peach orchard which last season produced approximately 175 carloads of peaches. Acting as its sales agents, the American Fruit Growers established a temporary office in the company's packing house. The entire crop was sold by long distance telephone for approximately $200,000. The telephone charges were $360.

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One of the ways in which to build up a state is to make the home surroundings beautiful with trees, shrubs, and flowers, and to make the home modern. Then young people will be glad to remain at home.


THE RIGHT TOOL SAVES TIME

For Clean-up WORK

When fall work starts, there's many a brush patch and fence row to clean out—many a ditch to dig.

Here is the tool for it. A grading hoe with a sturdy blade of tempered steel seven inches wide and nine inches deep. Hung and balanced like an ax it has the weight to make short work of cleaning out and cutting ditch.

The brand, True Temper, is burned in the handle to mark it as the best tool of its kind that can be made.

Branded on the handle of every genuine TRUE TEMPER tool

THE AMERICAN FORK & HOE CO.
General Offices: Cleveland, Ohio
Makers of Farm and Garden Tools for over 100 years

If your dealer has not yet stocked True Temper Grading Hoe, Cat. No. IGH7, send us his name and $2.10 and we will supply you direct, postpaid.

Over 400 other choice tools for every farm task described in this valuable 136-page Users' Catalog. Sent free on request.

TRUE TEMPER

Barker's "IDEAL" FRUIT PICKERS' BAG

Prevents bruising of fruit and makes picking far easier. You can pick more fruit in half the time with a Barker "IDEAL"

POSTPAID $1.75

This is a real bag for real service and satisfaction. Made of heavy canvas duck. Load easily carried and can be emptied gently without removing from shoulder. A practical and time-saving bag endorsed by every user.

At leading dealers or sent postpaid, $1.75
Send for Circular

BARKER MFG. CO., 270 So. Clinton Ave., Rochester, N. Y.

Baskets for Apples, Peaches, Plums, Grapes, Tomatoes, Cucumbers, Beans, etc. Boxes and Crates for Berries, Cucumbers, Celery, Cauliflower and vegetables of all kinds.

PLANT BOXES

Catalog mailed on request

The Pierce-Williams Co. South Haven, Mich. Jonesboro, Ark.

LATHAM
KING OF ALL REDS

Write for our Special fall prices on double inspected disease free plants. Heaviest yielding red raspberry known.

THE DANIELS NURSERY, Long Lake, Minnesota

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## Do a Favor to Your Neighbor

There is a neighbor living near you, a fruit grower. You know he is trying to do his best, for he frequently asks you what to do and when to do it, and you are always glad to give him the information.

If you think he would be benefited by the expert advice he would receive every month through the AMERICAN FRUIT GROWER MAGAZINE, why not call it to his attention? He would thank you for the courtesy.

When you are through reading this issue, loan this copy to that neighbor, first placing a big black "X" in the margin opposite this coupon. He'll get the point and grasp this opportunity to better his methods. Better reach for your pencil and do it now.

**Your Neighbor, in all likelihood, will avail himself of the opportunity to use this coupon**

**AMERICAN FRUIT GROWER MAGAZINE**
**53 West Jackson Boulevard, Chicago, Illinois**

Gentlemen: I enclose a dollar. Send me AMERICAN FRUIT GROWER MAGAZINE three years.

Name .....

Address .....

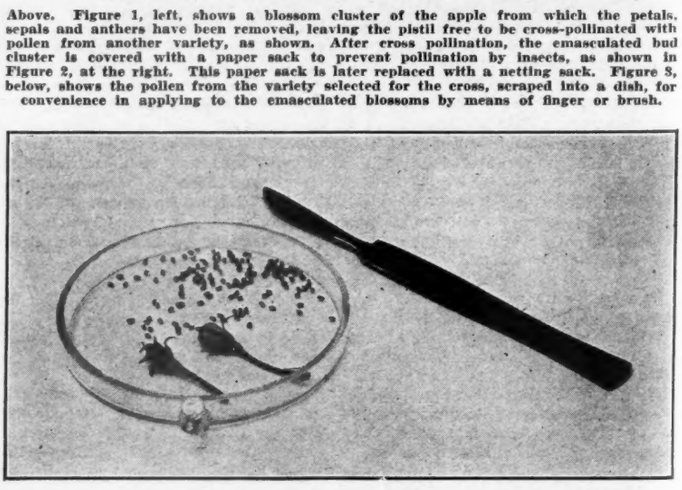

# Breeding New Varieties

(Continued from Page 3)

be readily removed in the blossom buds of apples and pears by a slight pull from thumb and fingers. In the blossom buds of plums, cherries, and peaches, a slight cut is made with a sharp knife near the base of the bud, after which petals, sepals, and anthers come readily away. A knife is of great assistance, in fact necessary, in emasculating buds of all small fruits, and in the grape, because of its very small flowers, forceps with curved points aid greatly. A little practice enables the operator to become expert in the work of emasculating any horticultural plant.

**SCIENTIFIC BREEDING A "SURGICAL OPERATION"**

**Above. Figure 1, left, shows a blossom cluster of the apple from which the petals, sepals and anthers have been removed, leaving the pistil free to be cross-pollinated with pollen from another variety, as shown. After cross pollination, the emasculated bud cluster is covered with a paper sack to prevent pollination by insects, as shown in Figure 2, at the right. This paper sack is later replaced with a netting sack. Figure 3, below, shows the pollen from the variety selected for the cross, scraped into a dish, for convenience in applying to the emasculated blossoms by means of finger or brush.**



When the buds in a cluster have been emasculated, the cluster should be covered with a white paper sack to prevent cross-pollination by insects. Figure 2 shows a cluster of emasculated apple buds covered to prevent cross-pollination. As emasculation is done before the stigmas are ready for pollination, pollen is usually not applied for two or three days, the length of time depending upon weather conditions.

The pollen or male element must also be protected, otherwise it may be contaminated by foreign pollen. Breeders secure pure pollen in one of two ways. The buds may be covered with a paper sack before they have opened, thus permitting the pollen to ripen on the tree; or the buds from the male parent may be brought indoors when the pollen is mature and scraped in a dish, as shown in Figure 3. Most breeders find the second method the better of the two with all fruits excepting the grape, which seems to shed its pollen better when the blossoms are attached to the vine.

The work of pollinating is extremely simple. The fingertip or a small brush is dipped in the dish of pollen and touched to the stigma, and the work is done. This operation is also illustrated in Figure 1. In order to prevent pollen of another plant getting on the stigma, the paper bag must be replaced and left on the blossom cluster for one or two weeks, until the danger of foreign pollination is passed. The paper bag is replaced with a netting sack which permits sunlight and air to reach the embryonic fruits and is useful in preserving fruits that drop prematurely and in locating the crossed fruits at harvest time. If much crossing is being done, and the kind of pollen is changed, the finger or brush used in applying the pollen must be sterilized in alcohol.

The seeds of all hardy fruits as soon as harvested should be stratified in sand to a depth of four or five inches, there to be left until the ground thaws in the spring, when the seed should be dug up and sown in flats under glass, or in well prepared seed beds out-of-doors. In stratifying the seed, it is a safe precaution against rodents to enclose it in galvanized wire netting. The young plants need all the care usually bestowed upon tender seedlings, and should be carefully pricked out in

pots, flats, or well protected cold frames. With the tree fruits, these seedlings are left in the nursery row for two or three years before setting in a permanent place. Strawberries are moved immediately to the fruiting plantation, while the other small fruits are grown one year in the nursery.

### Breeding Takes Time

All this seems very simple, and is very simple, yet the novice in plant breeding must not imagine that harvests are immediate or great. For example, during the 20 years the writer has been breeding fruits at this station, the grand total, in round numbers, of 80,000 seedlings have been grown, out of which 41,469 have fruited. From this 41,469 seedlings, 90 varieties have been named, of which only 45 are now on the market, with the probability that about half of the last number will be generally grown. Too often the novice, proud of his offspring, names and distributes sorts not worth while. To be worthy of naming, a seedling should possess outstanding characters in vigor, productiveness, hardiness, immunity to disease, should fit in a particular season, and the fruits should have good keeping quality, handsome color and delectable flavor. It is difficult indeed to obtain seedlings having all of these characters in a better combination than in any other, and it is not worth while naming a seedling unless it does surpass older sorts.

(In the concluding installment next month, Dr. Hedrick will describe 30 of the new fruit varieties developed at the Geneva station. These comprise nine apples, four pears, three varieties each of plums, grapes, raspberries and strawberries, and a cherry and nectarine.)

# Cold Storage for Peaches

By C. L. BURKHOLDER

IN PRACTICALLY every section of the United States peaches which can be disposed of on the local market bring the largest net return. If the season for popular varieties, such as Hale and Elberta, could be extended, a much larger percentage of the crop could be absorbed by the local trade. Some growers have found that good shipping varieties, and especially Hale, will stand up very nicely for periods of two to four weeks in cold storage. The color and general appearance of the fruit are injured very little by such treatment. Hale have been shipped 300 miles by local express after being in storage for two weeks and have reached their destination in good marketable condition. The flavor of peaches taken from cold storage is not the equal of freshly picked fruit, but local competition is often so much reduced by delaying sales for a short time that the fruit usually sells readily at an advanced price. Where cold storage is available, it is worth while for every grower to consider the possibilities of this additional outlet for some of his peach crop this year.

Prune plums, such as Italian and German prune, will hold very nicely for some time in cold storage. Fruit which is prime for picking is taken from the trees and placed in storage whenever market conditions are not favorable for immediate sales. Of course, fruit of this type must be kept under careful observation in storage, and this suggestion is one that should be used only when local market conditions are overloaded for a short period. On the other hand, some Indiana peach growers make it a yearly practice to hold back a part of their Hale peaches. They have been able so far to put this fruit on the market free from local competition at a price sufficiently high to pay them a nice dividend for their trouble and "head work."

A rather novel way of extending the picking season on a few rows of peaches of any variety is to give such trees several applications of nitrate of soda or sulphate of ammonia. If the normal application in the orchard is two pounds per tree, increase the dosage on these trees to three or four pounds and give one or two extra applications at three-week intervals. Such treatment greatly increases the amount of foliage and delays ripening a week or more. The color and flavor of such fruit are below normal, but after peaches are gone, there is always a brisk local demand by people who put off buying just a little too late to get in on the main crop. These customers are glad to get this late ripening fruit even if it is a bit off color.

# Black Raspberries Improved

BLACK RASPBERRIES deserve greater popularity than they now enjoy, but they will not gain recognition until better sorts are made available by systematic breeding, is the opinion of Dr. U. P. Hedrick, horticulturist at the experiment station at Geneva, N. Y., where efforts are being made to develop superior varieties of blackcaps.

"No small fruit has yielded so readily to domestication, and none is more easily improved," says Dr. Hedrick. "Systematic breeding of blackcaps will give more immediate results than any other small fruit."

The commercial cultivation of black raspberries began in this country in 1850 when H. H. Doolittle of Oaks Corners, N. Y., demonstrated that propagation from tips was a practical method for large scale production, it is said. With this discovery a new industry was launched with a variety brought in from the wild. By the close of the last century thousands of acres of blackcaps were being grown to supply evaporators that had sprung up over the country.

However, after 75 years, there is still a lack of good varieties. Better flavored sorts are needed. The seeds in our present varieties are too large and the fruit is too small. Greater resistance to disease is needed and can be obtained by systematic breeding. There is need, too, for everbearing varieties of black raspberries similar to the everbearing red kinds.

Black and red raspberries cross readily to produce the purple raspberry, and there are almost unlimited possibilities in developing these remarkable hybrids. Of the recently introduced black raspberries, probably the best is Dundee, while among the new varieties of purple raspberries, Brant and Webster are showing much promise.

# Buyers' Service Bureau

For the convenience of our readers we list below some lines of fruit farm equipment and home conveniences. If you are considering the purchase of any of these items we will be glad to forward your request for information to responsible manufacturers. From them you will receive full information as to prices, etc.

**FOR THE HARVEST**
- ☐ Ladders ☐ Fruit Pickers
- ☐ Picking Sacks
- ☐ Orchard Pick-up Wagons
- ☐ Berry Crates and Fillers
- ☐ Box and Shook Stock
- ☐ Bushel Baskets
- ☐ Tub-shape Baskets
- ☐ Less-than-bu. Baskets
- ☐ Fiber Fruit Packages
- ☐ Package Labels
- ☐ Canning Equipment
- ☐ Fruit Dryers or Dehydrators
- ☐ Fruit Pitters ☐ Peelers
- ☐ Corers ☐ Slicers
- ☐ Grading Machinery
- ☐ Fruit Cleaners
- ☐ Fruit Presses
- ☐ Cider Presses
- ☐ Pasteurizing Outfits
- ☐ Barrel Facers
- ☐ Basket Facers
- ☐ Barrel Fresses
- ☐ Box Presses
- ☐ Liners and Cushions
- ☐ Stencils
- ☐ Wax Paper

**ELECTRICAL**
- ☐ Wiring and Lighting Supplies
- ☐ Electrical Refrigeration
- ☐ Vacuum Cleaner
- ☐ Kitchen Motor
- ☐ Sewing Machine Motor
- ☐ Separator Motor
- ☐ Electric Fans
- ☐ Floor Lamps
- ☐ Electric Milker
- ☐ Electric Water Pumps
- ☐ Electric Iron ☐ Grills
- ☐ Heaters ☐ Vibrators

**PAINTS, OILS, ETC.**
- ☐ Inside Paint ☐ Barn Paint
- ☐ Furniture Stains and Enamels
- ☐ Auto Enamels
- ☐ Enamel Polish
- ☐ House Paint
- ☐ Wall Paper
- ☐ Cold Water Wall Finishes
- ☐ Roofing Paint
- ☐ Roofing Cement
- ☐ Lubricating Oil
- ☐ Cup Grease
- ☐ Belt Dressing
- ☐ Transmission Grease

**STOVES AND RANGES**
- ☐ Gas Range
- ☐ Gasoline Range
- ☐ Electric Range
- ☐ Coal Range
- ☐ Electric Hot Plate
- ☐ Electric Grill
- ☐ Blue Flame Kerosene Range
- ☐ Base Burner
- ☐ Coal Heater
- ☐ Wood Burning Heater

**MISCELLANEOUS CONTROL EQUIPMENT**
- ☐ Codling Moth Bands
- ☐ Fumigants for Root Insects
- ☐ Sticky Preparations

**CLOTHING**
- ☐ Ladies' and Children's Clothing
- ☐ Aprons
- ☐ Men's Clothing
- ☐ Overalls
- ☐ Rayons and Silks
- ☐ Woolens
- ☐ Cotton Fabrics
- ☐ Linens

**NURSERY STOCK**
- ☐ Plants
- ☐ Trees
- ☐ Small Fruit Plants
- ☐ Strawberry Plants
- ☐ Ornamentals
- ☐ Perennials

**SEEDS**
- ☐ Garden ☐ Field
- ☐ Flower ☐ Bulbs
- ☐ For Cover Crops
- ☐ Seed Potatoes

**FERTILIZERS**
- ☐ Nitrogen Fertilizers
- ☐ Phosphates
- ☐ Potash Salts
- ☐ Mixed Mineral Fertilizers
- ☐ Animal Manures
- ☐ Agricultural Lime
- ☐ Gypsum (Landplaster)

**TILLAGE TOOLS**
- ☐ Single Walking, 2-horse
- ☐ Single Walking, 1-horse
- ☐ Single Riding
- ☐ Riding Gang
- ☐ Disk Plows
- ☐ Horse Harrow
- ☐ Tractor Tillage Tools
- ☐ Horse Cultivators
- ☐ Hand Cultivators
- ☐ Grape Hoe
- ☐ Spiketooth Drag
- ☐ Springtooth Drag
- ☐ Subsoiler, Horse
- ☐ Subsoiler, Tractor
- ☐ Rakes ☐ Hoes
- ☐ Scuffle Hoe

**TRACTORS**
- ☐ Vineyard or Garden
- ☐ Orchard

**TRUCKS**
- ☐ Light Delivery
- ☐ Medium ☐ Fast
- ☐ Heavy Hauling
- ☐ Chassis

**BUILDING**
- ☐ Ready Cut Buildings
- ☐ House Plans ☐ Barn Plans
- ☐ Fruit Storage House Plans
- ☐ Lumber ☐ Millwork
- ☐ Insulation Materials
- ☐ Builders' Hardware
- ☐ Roofing ☐ Steel Siding
- ☐ Plaster ☐ Stucco

**FOR THE HOUSE**
- ☐ Plumbing Supplies
- ☐ Bathroom Fixtures
- ☐ Warm Air Furnace
- ☐ Hot Water Heating System
- ☐ Steam Heating System
- ☐ Oil Burners
- ☐ Carbide Gas System
- ☐ Farm Electric Plant
- ☐ Gasoline Lamps
- ☐ Pressure Water System
- ☐ Gravity Water System

**SPRAYING EQUIPMENT**
- ☐ Power Spray Rig
- ☐ Horse Traction Rig
- ☐ Cart Rig, Hand Pump
- ☐ Barrel Outfit
- ☐ Compressed Air Sprayer
- ☐ Hand Spray Pump
- ☐ Power Spray Pump
- ☐ Spray Rig Tank
- ☐ Water Supply Tank
- ☐ Supply Tank Tower
- ☐ Pipe and Fittings
- ☐ Pressure Spray Hose
- ☐ Spray Nozzles
- ☐ Spray Rods ☐ Spray Guns
- ☐ Spray and Dust Masks

**AUTO ACCESSORIES**
- ☐ Tires ☐ Batteries
- ☐ Spark Plugs ☐ Gas Savers
- ☐ Delivery Bodies
- ☐ Auto Washers

**FARM TOOLS, ETC.**
- ☐ Gasoline Engines
- ☐ Kerosene Engines
- ☐ Carpenter Tools
- ☐ Machinists' Tools
- ☐ Pipe Fitting Tools
- ☐ Masons' Tools
- ☐ Plasterers' Tools
- ☐ Lathes
- ☐ Buzz Saw Outfit
- ☐ Stump Pullers
- ☐ Fencing Tools
- ☐ Post Hole Diggers
- ☐ Shovels ☐ Picks ☐ Axes
- ☐ Electrical Wiring Tools

**HOUSEHOLD CONVENIENCES**
- ☐ Power Washing Machine
- ☐ Power Mangle
- ☐ Clothes Dryer
- ☐ Dish Washer
- ☐ Sewing Machine
- ☐ Phonograph
- ☐ Radio ☐ Ladders
- ☐ Sweepers and Cleaners
- ☐ Gasoline Irons

**DUSTING EQUIPMENT**
- ☐ Power Dusters
- ☐ Power Mixer and Duster
- ☐ Traction Cart Duster
- ☐ Hand Power Duster
- ☐ Knapsack Duster

**SPRAY MATERIALS**
- ☐ Miscible Oil
- ☐ Fish-Oil Soap
- ☐ Dry Lime-Sulphur
- ☐ Liquid Lime-Sulphur
- ☐ Bordeaux Mixture
- ☐ Copper Sulphate
- ☐ Hydrated Lime
- ☐ White Arsenic
- ☐ Arsenate of Lead
- ☐ Colloidal Sulphur Sprays
- ☐ Sulphur-Lead Sprays
- ☐ Summer Oil
- ☐ Contact Sprays for Sucking Insects
- ☐ Combination Insecticide and Fungicide

**MISCELLANEOUS ORCHARD EQUIPMENT**
- ☐ Orchard Heaters
- ☐ Orchard Thermostats
- ☐ Thermometers
- ☐ Microscopes
- ☐ Pruning Tools
- ☐ Grafting Tools
- ☐ Grafting Wax

**FURNITURE, ETC.**
- ☐ Living Room Furniture
- ☐ Bed Davenport
- ☐ Tables ☐ Desks
- ☐ Rugs ☐ Bookcase
- ☐ Dining Room Sets
- ☐ Silverware ☐ Dishes
- ☐ Glassware
- ☐ Table Linens
- ☐ Kitchen Cabinet
- ☐ Kitchen Furniture
- ☐ Cooking Utensils
- ☐ Aluminum Ware
- ☐ Enameled Ware

**DUST MATERIALS**
- ☐ Dormant Dust
- ☐ Superfine Dusting Sulphur
- ☐ Sulphur-Lead Dust
- ☐ Monohydrated Copper Dust
- ☐ Copper-Lead Dust
- ☐ Nicotine Dust
- ☐ Bulk Chemicals for making Dust

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## Presidential Candidates Outline Farm Plans

BOTH PRESIDENTIAL candidates having, in their acceptance speeches, announced their respective positions with reference to "Farm Relief," we are at liberty to analyze these positions and endeavor to forecast what agriculture may hope to receive at the hands of either party. We must concede that few votes will be changed by the stand of either candidate on the farm relief question. Except, of course, as the two views on this and other questions reveal the two men: their ability, honesty, and their respective methods of approaching a difficult job.

Both candidates offer enviable records of past accomplishment. One, a capable engineer, organizer and worker. The other, a capable statesman, organizer, fighter. Both are unquestionably honest. Neither has the suspicion of a spot on his record. This, despite the irresponsible claims that one "kept down the price of wheat during the war," and that the other "is a foe to morality," or that "he protected the saloon, the gambler, etc." The billallen-norris-stratton type of notoriety-hungry blatherskites we have always with us.

America is to be congratulated on the high type of the two men called to lead the major parties. They are alike in ability and honesty of purpose. Their difference is the imprint of the environment in which each has lived and worked and succeeded.

Limiting ourselves necessarily to the discussion of the attitude of the two candidates toward farm relief, we observe the difference that unlike training and experience create in the method of approaching a difficult problem. Both candidates, it will be noted, confine themselves to their proposed methods of meeting the problem, wisely leaving the actual mechanics to be worked out by agricultural marketing experts.

Secretary Hoover approaches the farm problem in the spirit of an experienced workman, with difficult work accomplished and a more difficult but not insurmountable job just ahead. He will use the tools at hand—the tariff, the intermediate credit banks, improved waterways and the existing farm marketing organizations. But special tools for special jobs. So—"a Federal Farm Board of representative farmers to be clothed with authority and resources." That these resources may run into the hundreds of millions he acknowledges. He approves. "The farm—is a state of living," he declares. It's a home. And in these farm homes, one-third of the homes of America, must be established "the same comforts as with other groups." "For the farm boys and girls the same opportunities in life as other boys and girls."

Somehow the faces of children peep out from behind the man throughout his speech. "Racial progress marches upon the feet of healthy and instructed children." We get the picture. With his mind on the children of the present and the future, the capable workman, the efficient engineer, unostentatiously outlines the work ahead and tells how he proposes to do the job. The picture inspires confidence.

Governor Smith, with his quarter-century experience in public service, views the farm problem as a matter of public policy that must be met by intelligent legislation. "Government policy should spring from the deliberate action of an informed electorate." "The people can and do grasp the problems of government." He shows a broad comprehension of the situation. "Farm debt has increased ten billions, farm values have decreased twenty billions." "Large numbers of farmers have lost all their property." He points out the vital necessity to the nation of farm prosperity. "The normal market among farmers for the products of industry is ten billions." Against our industrial exports of one-sixth that amount.

Special legislation, he makes plain, has liberally aided other fields of endeavor. The tariff has protected industry. The Federal Reserve System has stabilized commerce. Agriculture alone, without benefit of special aids, is handicapped. "I propose to substitute action for inaction, and friendliness for hostility." With this as a basis upon which to construct the legislative program, he states that "only the mechanics remain to be devised."

But special legislation concerns many groups of our nation, so interrelated are our interests. Then speaks the experienced legislator and executive: "In my administration of the government of my State, whenever I was confronted with a problem of this character, I called into conference those best equipped on the particular subject in hand. I shall follow that course with regard to agriculture." "If elected, I shall immediately after election ask leaders irrespective of party to enter upon this task." And the plan thus created "should be subjected at once to searching, able and fair-minded analysis, because the interests of all require that the solution shall be economically sound." Truly a workable program.

Other issues will determine which of these two able Americans shall carry out the program of farm relief. The interests of Agriculture are safe with either. And the records of both guarantee celerity in action.

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